

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE

APPLERA CORPORATION, MDS INC., and  
APPLIED BIOSYSTEMS/MDS SCIEX  
INSTRUMENTS,

Plaintiffs,

v.

THERMO ELECTRON CORPORATION,  
Defendant.

Civil Action No.: 04-1230 GMS

THERMO FINNIGAN LLC,

Plaintiff,

v.

APPLERA CORPORATION, MDS INC., and  
APPLIED BIOSYSTEMS/MDS SCIEX  
INSTRUMENTS,

Defendants.

Civil Action No.: 05-110 GMS

**REDACTED - PUBLIC VERSION**

**THERMO'S ANSWERING MARKMAN BRIEF**

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## INTRODUCTION

Pervasive errors in AB/Sciex's approach to claim construction are addressed in the first portion of this Answering Brief. The remainder of the Answering Brief addresses those disputed claim terms that merit additional attention in light of the arguments made in AB/Sciex's Opening Brief. To the extent that it does not address an issue directly, Thermo relies upon the arguments from Thermo's Opening Brief.

### **I. AB/Sciex's Approach to Claim Construction Is Contrary to Basic Principles of Judicial Process in General and of Claim Construction in Particular.**

#### **A. AB/Sciex Incorrectly Suggests That This Court and Thermo Are Bound by Judge McKelvie's Claim Constructions in a Case to Which Thermo Was Not a Party.**

At least 16 times in its Opening Brief, AB/Sciex says that the Court should adopt certain of AB/Sciex's proposed constructions because those constructions were adopted by Judge McKelvie in the earlier *Micromass* litigation to which Thermo was not a party. AB/Sciex says repeatedly that those earlier rulings are "*stare decisis*" and should be "given deference," even to the point of suggesting that this Court and Thermo are somehow bound by them. (*E.g.*, AB/Sciex Op. Br. 15-16, 20, 24, 25, 54.) For several reasons discussed below, this suggestion is incorrect.

Initially, however, it is important to note that *AB/Sciex* itself *is* bound by the *Micromass* Court's earlier rulings as a matter of collateral estoppel, because they concern material matters actually litigated by AB/Sciex and decided in the earlier case. *See Pharmacia & Upjohn Co. v. Mylan Pharms., Inc.*, 170 F.3d 1373, 1379-82 (Fed. Cir. 1999) (affirming finding of collateral estoppel where patent was declared invalid and unenforceable in earlier action); *Pfaff v. Wells Elecs., Inc.*, 5 F.3d 514, 518 (Fed. Cir. 1993) (prior claim construction has "issue preclusive effect on the present case"); *TM Patents v. Int'l Bus. Mach. Corp.*, 72 F.Supp.2d 370, 379 (S.D.N.Y. 1999) (where plaintiff had full and fair opportunity to litigate meaning of claims in earlier case, construction was binding on plaintiff). In addition, in some instances AB/Sciex itself urged that the *Micromass* Court



adopt the constructions that it did, so AB/Sciex is also judicially estopped from making contrary arguments now. *See RF Delaware, Inc. v. Pacific Keystone Techs., Inc.*, 326 F.3d 1255, 1262 (Fed. Cir. 2003) (“The doctrine of judicial estoppel is that where a party *successfully* urges a particular position in a legal proceeding, it is estopped from taking a contrary position in a subsequent proceeding where its interests have changed.”); *Boler Co. v. Watson & Chalin Mfg., Inc.*, 372 F.Supp.2d 1013, 1020-21 (N.D. Ohio 2004) (patent assignee who asserted that using 360-degree weld was element of claim in earlier case was judicially estopped from arguing in later case that 360-degree weld was not element); *Stairmaster Sports/Med. Prods., Inc. v. Groupe Procycle, Inc.*, 25 F.Supp.2d 270, 279-80 (D. Del. 1998) (patentee was judicially estopped from construing claim during infringement phase differently than during claim construction phase); *Cabot Safety Intermediate Corp. v. Howard S. Leight & Assocs., Inc.*, 992 F.Supp. 463, 466 (D. Mass. 1998) (patentee was judicially estopped from asserting claim construction in later case different from claim construction successfully urged in earlier case); *Renishaw plc v. Marposs Societa Per Azioni*, 974 F.Supp. 1056, 1085 (E.D. Mich. 1997) (same).

However, this Court and Thermo are in a completely different position from AB/Sciex. First, most of the claim construction issues now before this Court were not decided either by Judge McKelvie or the Federal Circuit in *Micromass*, nor even disputed during that case. Indeed, only seven of the 32 claim terms currently at issue were construed by Judge McKelvie in *Micromass*. Moreover, constructions of only three of these 32 terms were contested before the Federal Circuit. And (as will be explained in more detail below), the terms that were disputed were disputed based on different arguments and different evidence. Table I, below, provides a summary of the extent to which terms currently at issue were disputed in the *Micromass* case.

Table I: Prior Treatment of Disputed Claim Terms from the '736 Patent

<i>Claim Term</i>	<i>Did Judge McKelvie Construe?</i>	<i>Was the issue appealed?</i>	<i>Comment</i>
"separated by a wall"  "separated by an interchamber orifice"	Yes.	Yes.	Micromass conceded before Judge McKelvie that the claims' "separated by" language is not itself limiting, but then attempted to change its argument on appeal. Thus, the issue now raised by Thermo was never presented to Judge McKelvie.
"means for generating . . . a trace substance"	No.	No.	
"means . . . for directing"  "means . . . for maintaining"	Yes.	No.	Judge McKelvie noted but never addressed the issue regarding structure now raised by Thermo.
"means for flowing"	Yes.	No.	Judge McKelvie noted but never addressed the issue regarding structure now raised by Thermo.
"rod," "rod set," "rod means," "parallel rod means"	No.	No.	
"extending along at least a substantial portion . . ."	No.	No.	
"elongated"	No.	No.	
"spaced laterally apart . . ."	No.	No.	
"extending longitudinally"; "longitudinally extending"	No.	No.	
"located end to end"	Yes.	Yes.	Thermo does not dispute Judge McKelvie's construction, and only questions the need for a construction in this case.
"means for applying"	No.	No.	
"essentially an AC-only voltage"	No.	No.	
"mass filter"	No.	No.	
"very low pressure"; "substantially lower pressure"	Yes.	No.	Thermo is seeking a different construction than Micromass, based on different evidence and different law.
"length of said first rod set"	No.	No.	
"Improved transmission . . ."	No.	Yes.	Judge McKelvie ruled that no construction was necessary. Micromass attempted to switch its argument on appeal.

Second, Thermo was not a party to the *Micromass* case. Principles of collateral and judicial estoppel do not bar Thermo (as opposed to AB/Sciex) from challenging any of the claim constructions in *Micromass*. Thermo's products are also different from Micromass's products, and AB/Sciex's accusation of these new products therefore requires resolution of new legal and factual issues, including claim construction issues. As a matter of constitutional due process, Thermo is entitled to litigate the issue of claim construction *de novo* free of suggestions that it is bound by rulings in a case to which it was not a party. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370,

391 (1996) (claim construction issue preclusion “could not be asserted against new and independent infringement defendants”); *Third Wave Techs., Inc. v. Stratagene Corp.*, 381 F.Supp.2d 891, 914 (W.D.Wis. 2005) (“[A] second alleged infringer is not bound by prior claim construction unless it had a full and fair opportunity to litigate the construction in the first action.”); *Lamps Plus, Inc. v. Dolan*, No. 3:01-CV-1537-K, 2003 U.S. Dist. Lexis 19578, \*5-6 (N.D. Texas Nov. 3, 2003) (defendant’s due process rights could be violated by adoption of claim construction from case in which defendant did not participate); *TM Patents*, 72 F.Supp.2d at 379 (“[C]ollateral estoppel forecloses [plaintiff] from relitigating the meaning of [previously construed claim limitations but,] of course, [defendant] is not precluded from litigating anything at all.”); *Texas Instruments, Inc. v. Linear Techs. Corp.*, 182 F.Supp.2d 580, 589-90 (E.D. Texas 2002) (“[I]n those cases where, as here, defendants have had no chance to litigate their claims, the application of *stare decisis* in the form of an adoption of claims construed without Defendants’ participation could cause an injustice of precisely the sort that due process seeks to avoid.”).

Third, AB/Sciex is incorrect to the extent it is suggesting that another trial judge’s opinion binds this Court’s present claim constructions. Claim construction disputes in this case should “receive an independent review to ensure fairness to the parties in this litigation.” *Nilssen v. Motorola, Inc.*, 80 F. Supp. 2d 921, 924 n.4 (N.D. Ill. 2000) (“[W]hile the Court is respectful of Judge Kennelly’s ruling construing some of the claims in those patents in *Nilssen v. Magnetek, Inc.*, 1999 WL 982966 (N.D. Ill. 1999), and of the ‘importance of uniformity in the treatment of a given patent’ (*Markman*, 517 U.S. at 390, 116 S. Ct. 1384), it is not compelled to reach the same conclusions.”).

The Federal Circuit's affirmance of the *Micromass* judgment came in a one-paragraph *per curiam* order that states on its face, "[T]his order is not citable as precedent." (JA 590.)<sup>1</sup> The Federal Circuit's order does not indicate that any particular claim construction ruling of the district court was correct or incorrect; at most all that one could infer is that the Federal Circuit did not find prejudicial whatever error existed in the district court's claim constructions.

All of the cases save one cited by AB/Sciex for the proposition that *stare decisis* applies here involved specific claim constructions made by the Federal Circuit itself, not claim constructions embedded in a district court judgment that the Federal Circuit affirmed without comment on any claim constructions. See *Burke, Inc. v. Bruno Indep. Living Aids, Inc.*, 183 F.3d 1334, 1335-38, 1341-42 (Fed. Cir. 1999) (deferring to a prior Federal Circuit claim construction); *Tate Access Floors, Inc. v. Interface Architecture Resources, Inc.*, 185 F. Supp. 2d 588, 595 n.4 (D. Md. 2002) (noting that "the Federal Circuit already has undertaken two independent detailed analyses that construe" the claim terms); *Wang Labs, Inc. v. Oki Elec. Indus. Co.*, 15 F. Supp. 2d 166, 175-76 (D. Mass. 1998) (Federal Circuit had "articulated its own interpretation of the patent"). Further, even in cases where there is a prior Federal Circuit claim construction, the Federal Circuit and this Court have not accepted prior constructions blindly, but have instead first confirmed that those constructions were supported. See *Burke*, 183 F.3d at 1341; *Tate Access Floors*, 185 F.Supp.2d at 596.

The lone case cited by AB/Sciex that is close to the procedural posture here (*i.e.*, where the claim construction had come from an earlier trial court), the Court indicated only that it would defer to prior constructions when parties did "not raise new arguments." *KX Indus., L.P. v. PUR Water*

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<sup>1</sup> Citations to "JA" refer to the Joint Appendix filed by the parties with their opening *Markman* briefs. Citations to "TA" refer to the Thermo Appendix filed with Thermo's Opening *Markman* Brief. Citations to "TB" refer to the Appendix to Thermo's Answering *Markman* Brief, filed herewith.

*Purification Prods., Inc.*, 108 F. Supp. 2d 380, 387 (D. Del. 2001) (McKelvie, J.). Moreover, in *KX Industries*, the trial judge (again, Judge McKelvie) in fact altered prior claim constructions for *three of five* disputed terms that he construed. *KX Indus.*, 108 F. Supp.2d at 387-91. With respect to one term, the Court even expressly found “that its earlier opinion ... was wrong.” *Id.* at 389 (emphasis added).

Fourth, Thermo is hardly making a frontal attack on the Court’s constructions in *Micromass*. Thermo accepts the overwhelming majority of the *Micromass* Court’s constructions. Indeed, the Joint Claim Construction Chart for this case (D.I. 64) itself lists at least 20 points on which Thermo has agreed with the Court’s constructions in *Micromass*, and that are therefore not before this Court for resolution.

Thermo’s challenges are limited to situations where the prior ruling is demonstrably wrong. For example, corresponding “structure” to a means-plus-function limitation must be just that — *structure*. Contrary to Judge McKelvie’s constructions of various means-plus-function terms, structure is *not a setting* for structure such as “independent operating parameters,” *not a condition* such as “the existence of a gas ... at a higher pressure,” and *not an act* such as “the application of two variables.” (JA 527-28) (“corresponding structures” identified in *Micromass*). Thus, for example, a “DC voltage” or “DC potential” is not a structure at all (contrary to what the *Micromass* Court found) — it is just electricity. Saying that a “DC voltage” — or its “application” — is “corresponding structure” for “a means for directing ions” is like saying that the “corresponding structure” for “a means for baking bread” is not an oven, but rather the electricity used to run the oven. That is incorrect as a matter of law.

**B. AB/Sciex Is Bound By Its Earlier Representations to this Court and the Patent Office and By the Court’s Rulings Against It in the *Micromass* Litigation.**

AB/Sciex has attempt to change its position in this case on a large number of claim term constructions and issues. In many instances, AB/Sciex is making an argument to this Court that is

the *exact opposite* of the argument it made to Judge McKelvie and/or the PTO. Given AB/Sciex's stated "deference" to the *Micromass* Court's rulings, AB/Sciex's attempts to retreat from that Court's rulings — and AB/Sciex's representations that led to them — are particularly surprising. AB/Sciex's contradictions in this regard are chronicled in the term-by-term analysis provided later in this brief. Here we focus on perhaps the most glaring example, namely AB/Sciex's attempt to retreat from this Court's rulings, and AB/Sciex's own prior statements, concerning whether its patent can cover ion traps.

With respect to ion traps, AB/Sciex mentions the Court's rulings — to which AB/Sciex is bound by collateral estoppel — in a single footnote. (AB/Sciex Br. at 49 n. 18) AB/Sciex says that the Court held only that AB/Sciex was estopped from asserting that "three dimensional ion traps" infringed, and "that the scope of the estoppel was limited to 'the structure of prior art presented.'" (*Id.*)

This is not what the Court ruled at all. The Court ruled unequivocally that

- a "competitor would reasonably conclude that *ion traps* would not infringe the claimed mass spectrometer system";
- "a reasonable competitor would conclude that *ion traps* were not covered by the claims of the '736 patent"; and
- "the remaining question is whether AB/Sciex, by *disclaiming coverage of ion traps*, should be estopped from asserting that [Micromass's "ion tunnel" device] infringes . . . ."

204 F.Supp.2d at 773-774 (emphasis added). AB/Sciex never appealed these rulings, a fact which it also does not mention in its Opening Brief.

The term "three dimensional ion trap" was never mentioned by the Court, let alone used as a limitation on the Court's ruling that "ion traps" generally were disclaimed. Nor did the Court ever

indicate that its ruling was in any way “limited to the ‘structure of the prior art presented,’” as AB/Sciex asserts. To the contrary, the Court found broadly that “a reasonable competitor would conclude that ion traps were not covered by the claims of the ’736 patent.” *Id.* at 774.<sup>2</sup> The Court thus found that “ion traps” — not just one kind of ion trap — had been disclaimed.

AB/Sciex ignores altogether its own representations to the Court regarding ion traps. To justify its non-disclosure of ion trap prior art to the Patent Office during prosecution, AB/Sciex repeatedly made representations to the Court like the following:

- “The inventors correctly believed that ion traps .... were not relevant.”
- “Dr. Douglas [the first named inventor of the ’736 patent] testified that an ion trap is ‘a very different device’ because, *inter alia*, ‘there’s no ion storage in the ’736 patent.’”

(TA 235, 306) Again, despite AB/Sciex’s present assertions to the contrary, AB/Sciex never limited this disclaimer to “three dimensional” ion traps or any other sub-type of ion traps.

AB/Sciex is similarly less than candid in its discussion of its representations to the PTO. (AB/Sciex Br. at 46-49.) Instead of quoting what it represented to the PTO, AB/Sciex now characterizes what it said, claiming (again, falsely) that it limited its disclaimer to “three dimensional quadrupole ion traps” (*id.* at 46) — words that AB/Sciex never used in its disclaimers to the PTO — and that its disclaimer distinguished between its system’s “ion guide” (the first rod set) and its system’s “mass filter” (the second rod set).

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<sup>2</sup> Further, the “non-rod set structure” language of the Court quoted by AB/Sciex is quoted misleadingly. (AB/Sciex Br. at 49 n.18.) What Judge McKelvie addresses in that passage is the additional question of whether AB/Sciex’s disclaimer should go “*beyond* ion traps,” 204 F. Supp. 2d at 774 (emphasis added), in particular whether AB/Sciex should be found to have also “disclaimed coverage of any electrodes that are not rods.” *Id.* at 773. Judge McKelvie expressly identified this as a separate estoppel question from the ion trap disclaimer question. *Id.* at 773.



AB/Sciex's actual words speak for themselves:

- "Vedel differs from the invention in that it relates to an ion trap. The ion trap, as described above, operates on a fundamentally different principle than the mass spectrometer system according to the invention."
- "Schaaf's ion trap operates on a fundamentally different principle than the claimed mass spectrometer. With an ion trap, ions of a selected range of mass to charge ratios are *trapped or stored* for a period of time (which can be quite lengthy) due to electric fields generated with electrodes. . . . The ion trap is therefore designed to *trap or contain* ions within a confined volume and then to apply specific fields to eject them. . . . The invention of the '736 patent relates to an ion *transmission* rod set in a mass spectrometer. . . . The first rod set receives essentially only an AC voltage so that ions are guided through the first vacuum chamber without being trapped there, while the second rod set receives both AC and DC voltages so that the second rod set may act as a *mass filter*. Thus with the invention, ions may travel through an inlet orifice into the first vacuum chamber, *through* the first vacuum chamber, *through* an interchamber office, and *through* the second vacuum chamber."

(JA 173-76 (emphasis added).)

Equally surprising is AB/Sciex's failure to mention the sworn testimony of the '736 patent's inventor, Dr. Douglas, on the subject:

- "[T]here's no ion storage in the 736 patent."
- "There's nothing in the 736 patent about trapping."
- "I would say trapping ions, and not trapping ions is a big difference."

(TA 336.)



**C. AB/Sciex Repeatedly Proposes Claim Constructions That Render Claim Terms Meaningless.**

By definition, a patent claim term is a *limitation* on the claimed invention. Hence, every claim term must be construed so as to *limit* a patent holder's right to exclude. *See, e.g., Tex. Instruments, Inc. v. U.S. Int'l Trade Comm'n*, 988 F.2d 1165, 1171 (Fed. Cir. 1993) (rejecting "contorted construction of the claim language" that "would render the disputed language mere surplusage" and "read an express limitation out of the claims").

AB/Sciex's proposed claim constructions for the '736 patent substantially ignore this fundamental principle, rendering multiple claim terms meaningless and without any limiting effect. For example, AB/Sciex now argues:

- that a "rod" is not a "rod," but instead "an electrode having a length" or "'groups of open wires or other open structures.'" In other words, now anything (including, it seems, a tennis racquet, a screen door, or even an open window) can be a "rod." (AB/Sciex Op. Br. 28-30.)
- that "rod means" equals "rod" — *i.e.*, that the claim term "means" is meaningless. (AB/Sciex Op. Br. 30-31.)
- that "first and second vacuum chambers separated by a wall" means only that there are two vacuum chambers. According to AB/Sciex, there is no need for any wall that "separate[s]" the two chambers.
- that "*elongated* parallel rod means spaced laterally apart a *short* distance" means nothing, because "there is no minimum rod length" and there is no "correlation between the distance separating the rods and the length of the rods." (AB/Sciex Op. Br. 33-34.)

All of these constructions are contrary to the established rule that claim terms should be construed so as to have meaning. *Merck & Co. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005) ("A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so.").

**D. AB/Sciex “Picks and Chooses” from the Evidence to Try to Achieve Predetermined Results.**

AB/Sciex repeatedly, but incorrectly, poses as a defender of the purity of rules regarding the materials that should be consulted in construing claims. (*E.g.*, AB/Sciex Op. Br. 1-2, 13-14.) When AB/Sciex actually construes claim terms, however, it picks and chooses from an ever-changing mix of alleged plain meaning, alleged specialized meaning, selected excerpts from the specification, prosecution history, or the Court’s opinions in *Micromass*, and even forbidden extrinsic evidence such as accused products in this case (or even the accused products in the *Micromass* case).<sup>3</sup> The only unifying “principle” in AB/Sciex’s inconsistent approach to claim construction is pursuit of the result that AB/Sciex wants.

For example, on the meaning of “rod” in its ’736 patent, AB/Sciex, despite urging the “ordinary meaning” of a claim term in other contexts (*e.g.*, AB/Sciex Op. Br. at 14), ignores the ordinary meaning of “rod” as “a slender bar,” and says that “[r]od” is a technical term that has a specialized meaning in the field of mass spectrometry — a “specialized meaning” that, according to AB/Sciex’s assertions, is very broad and amorphous. (AB/Sciex Op. at 28) Given AB/Sciex’s assertions, one would expect that AB/Sciex would then produce a technical dictionary or similar reference to document the asserted “specialized meaning.” However, none is forthcoming. The reason for that is that “rod” has the same meaning in the field of mass spectrometry — a slender bar — as it does generally. (*See* TB 65, RPW Scott, “*Gas Chromatography – Tandem Techniques*”; TB

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<sup>3</sup> The Federal Circuit has repeatedly made clear that claim construction is to proceed without regard to the nature of the accused devices. *Optical Disc Corp. v. Del Mar Avionics*, 208 F.3d 1324, 1333 (Fed. Cir. 2000); (“[C]laim scope is determined without regard to the accused device.”); *Young Dental Mfg. Co., Inc. v. Q3 Special Prods., Inc.*, 112 F.3d 1137, 1141 (Fed. Cir. 1997) (“[C]laim scope is . . . determined without regard for the accused device.”) AB/Sciex’s efforts to influence the Court’s decision by making (inaccurate, incomplete, and argumentative) representations regarding the nature of Thermo’s products is therefore inappropriate.

70, Extrel Core Mass Spectrometers, “*Quadrupole Mass Filters*”; TB 80, Pfeiffer Vacuum, “*Mass Spectrometer 05 06 07*”; TB 94, Waters Corporation, “The Mass Spectrometer: Instrument Architecture and Main Characteristics” (uniformly describing or depicting “rods” as slender bars.))

Ignoring ordinary meaning, AB/Sciex then also ignores its own patent specification, which AB/Sciex elsewhere correctly indicates “is the single best guide to the meaning of a disputed term.” (AB/Sciex Op. Br. at 61) The ’736 patent’s specification depicts and describes *every* rod related to the invention as a slender bar that “cannot be too short.” (See JA 1, 18, 20, 22, 12-13, ’736 patent, fig. 1, 6:21-22; 9:13-14; 13:9-24.) Ignoring its own specification, AB/Sciex refers to extrinsic evidence of other patents and asserts that “one skilled in the art would conclude that there is no minimum rod length.” (AB/Sciex Op. Br. at 33.) Obviously, one skilled in the art could not conclude that “there is no minimum rod length” when the patent at issue says the opposite.

The parties’ contrasting approaches to claim construction are demonstrated by comparing their approaches to construction of the claim term “separated by a wall” from AB/Sciex’s ’736 patent with their approaches to construction of the claim term “mass analyzer” from Thermo’s ’784 patent.

AB/Sciex asserts that “[t]he phrase ‘separated by a wall’ does not appear in the specification” of its patent. (AB/Sciex Op. Br. at 16) This assertion is incorrect. The phrase is used explicitly in the section entitled “Background of the Invention,” where the patent says that “[i]n one of its broadest aspects the invention provides a mass spectrometer system comprising: (a) first and second vacuum chambers separated by a wall ....” (JA 16, ’736 patent, 1:55-58) (emphasis added).) As uniformly shown and described in the specification, the “separating” wall forms a common boundary of the two vacuum chambers, with an “interchamber” orifice in it. (JA 17, 19, ’736 patent, 3:21-24, 3:49-50, 4:38-42; 4:24-26; 7:16-17, 7:23, 7:30, 7:42, 7:48-49). Having thus ignored the patent specification, AB/Sciex goes on to argue for a definition (that “separated by a wall” just means “having a wall somewhere in between”) that is also broader than the ordinary dictionary meaning of “separated by a wall” (*i.e.*, having a wall forming a dividing line); AB/Sciex thus posits a meaning of

“separated by a wall” that is both broader than the ordinary meaning and broader than what the specification teaches.

By contrast, Thermo looks to the specification to identify the meaning of “separated by a wall” in the “broadest aspects” of the invention (JA 16, ’736 patent, 1:55) — which in *every* description and *every* embodiment is shown to include first and second vacuum chambers truly “separated by” one and only one wall. Thermo also looks to the dictionary, which confirms that this reading of the specification is harmonious with the plain meaning of “separated.” Thermo is not trying to “limit the claims to the preferred embodiments.” (AB/Sciex Op. Br. at 15). Thermo is trying to define the claim term “separated by a wall” in accordance with both its ordinary meaning and its use in the specification to describe “the invention.”

When the task is construing Thermo’s ’784 claim term “mass analyzer,” AB/Sciex’s approach changes dramatically, but Thermo’s approach remains consistent. Because the scope of Thermo’s claims is now at issue, AB/Sciex’s goal here is to limit, rather than broaden, the claims. Accordingly, AB/Sciex proposes a definition of “mass analyzer” that is admittedly narrower than the ordinary meaning, namely that the analyzer must contain an ion “detector.” (AB/Sciex Op. Br. at 60.) AB/Sciex attempts to justify this narrowing by pointing to *one example* from the specification (Figure 1) in which an analyzer is shown as including a detector. (*Id.*) But another figure from the ’784 patent, Figure 8, makes no such representation; another portion of the specification says that the “present invention can be used” with ion trap analyzers that do not include a detector (TB 51, 58, RE 34,000, 2:17-20, 2:41-46, fig. 1); and nothing else in the specification suggests that an analyzer must contain a detector in order to constitute an element of “the invention.” AB/Sciex thus proposes a construction of “mass analyzer” that is both narrower than its plain meaning and narrower than what the specification teaches. AB/Sciex’s effort to limit a broad claim term (“mass analyzer”) to one particular embodiment of that invention is an instance of what the Federal Circuit has called a “cardinal sin” of claim construction. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1320 (Fed. Cir.

2005) (importing a limitation from the specification into a claim is “one of the cardinal sins of patent law”) (internal quotation marks omitted).

In contrast, Thermo’s approach to construing “mass analyzer” from Thermo’s ’784 patent is consistent with Thermo’s approach to construing “separated by a wall” from AB/Sciex’s ’736 patent. Thermo notes the ordinary meaning of the term “mass analyzer” (according to which an analyzer may or may not contain a detector), and then shows that such meaning is consistent with the specification, which discloses examples of analyzers with or without detectors, both of which practice the invention. (Thermo Op. Br. at 63-64.)

These examples illustrate the fundamental differences between Thermo’s and AB/Sciex’s approaches to claim construction (lest the Court think both parties are guilty of the same “sins”). As *Phillips* teaches, Thermo proposes that claim terms be given their ordinary meaning consistent with the patent specification and prosecution history. It is true that sometimes this will result in constructions of terms that are no broader than the embodiments described in the specification — that is because the specification does not describe the terms any more broadly than their plain meaning. *See Phillips*, 415 F.3d at 1323 (specification may make clear that claims and embodiments are one and the same). On the other hand, if the plain meaning is broader than what the patent specification shows to be merely particular examples of the invention, then the broader plain meaning should control (absent a disclaimer or the application of 35 U.S.C. § 112, ¶ 6). Thermo applies these principles both to its own patent and to AB/Sciex’s patent.

AB/Sciex’s approach is different and inconsistent as between the two patents. With its own ’736 patent, AB/Sciex does not want claim terms to be limited by either their plain meaning *or* the specification, and AB/Sciex proposes “specialized meaning[s]” that lack a grounding in either. In the case of Thermo’s patent, AB/Sciex still does not want to give claim language its plain meaning, but here seeks to limit that language to just one disclosed embodiment. Neither of these inconsistent approaches advocated by AB/Sciex is what *Phillips* teaches.

## II. Disputed Claim Terms for the '736 Patent

### A. "Separated by"

AB/Sciex's arguments in support of its claim constructions are individually flawed as well as generally opportunistic and inconsistent.

'736 Term	Claims	Thermo Proposal	AB/Sciex Proposal
first and second vacuum chambers <u>separated by a wall</u> ... an interchamber orifice located in said wall [claim 1]	1, 14	1. "First and second vacuum chambers separated by a wall" means that a wall defines a common boundary of each of the first and second vacuum chambers  1. "An interchamber orifice located in said wall" means an opening in the wall that connects the first and second vacuum chambers.	1. "Separated by a wall" means at least a wall between the first and second vacuum chambers.
first and second spaces ... <u>separated by an interchamber orifice</u> [claim 14]		14. "First and second spaces ... separated by an interchamber orifice" means an opening is located at a common boundary of each of the first and second spaces.	1, 14. "Interchamber orifice" means an orifice in a wall between the first and second vacuum chambers.

AB/Sciex's argument for its proposed construction of "separated by" is little more than a request that this Court follow what Judge McKelvie did. However, AB/Sciex is incorrect that the issue presented by Thermo here was presented in the *Micromass* case. In that case,

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<sup>4</sup> In any event, neither Judge McKelvie nor the Federal

Circuit reached the issue now in dispute.

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On appeal, Micromass then impermissibly tried to change its position and make the argument that Thermo now makes. (TB 44-45, AB/Sciex App. Br.) AB/Sciex noted that Micromass had waived the issue and could not litigate it on appeal. (*Id.*)

AB/Sciex incorrectly relies on the word “comprising” to suggest that “a wall” and “an interchamber orifice” need not actually “separate” the first and second chambers, or first and second “spaces,” as the claims state, but instead must merely be located somewhere in between them. As noted in Thermo’s Opening Brief, the claims expressly require that “a wall” or “an interchamber orifice” provide such separation, and they do *not* claim systems “comprising a wall” or “comprising an interchamber orifice.”<sup>5</sup> Consequently, AB/Sciex’s reliance on the claims’ use of “comprising” is misplaced. *See, e.g., Moleculon Research Corp. v. CBS, Inc.*, 793 F.2d 1261, 1271 (Fed Cir. 1986) (finding that use of the transitional phrase “which comprises” with reference to the steps of a method claim did not “affect the scope of the particular structure recited within the method claim’s step”). In the ’736 patent’s claims, “a wall” and “an interchamber orifice” are described as having a specific relationship to “first and second vacuum chambers” or “first and second spaces,” respectively — *i.e.*, they are described as “separat[ing]” those chambers or spaces. The claims must be construed to reflect that relationship. *See Kustom Signals, Inc. v. Applied Concepts, Inc.*, 264 F.3d 1332 (Fed. Cir. 2001) (“The open-ended transition term ‘comprising’ does not free the claim from its own limitations.”); *cf. Moleculon*, 793 F.2d at 1271 (“The district court erred . . . in using the transitional phrase ‘which comprises’ to expand the scope of the recited ‘eight cube pieces.’”).

Recent Federal Circuit decisions make clear that a claim’s use of the word “comprising” does not empty further specific claim limitations of meaning. For example, in the Federal Circuit’s (post-*Phillips*) decision in *Aquatex Industries, Inc. v. Techniche Solutions*, 419 F.3d 1374 (Fed. Cir. 2005), the patent at issue concerned claimed methods using a “water-absorbent layer” “comprising” certain features, including “a fiberfill batting material.” *Id.* at 1378. Yet the Federal Circuit rejected a reading of “a fiberfill batting material” that would include “a *combination* of natural and synthetic fibers,” even though such a “combination” would also include (*i.e.*, “comprise”) synthetic fibers that,

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<sup>5</sup> Indeed, in claim 14, the “separated by” language even *precedes* the term “comprising.”



if present alone, would clearly satisfy the claims. *Id.* at 1380 (emphasis added). Similarly, in the '736 patent, claim language requiring “first and second chambers separated by a wall” and “first and second spaces . . . separated by an interchamber orifice” should not be construed — contrary to both plain meaning and the specification — as though the claims read “first and second chambers separated by a *combination* of structures including a wall” and “first and second spaces separated by a *combination* of structures including an interchamber orifice.”

Thermo’s construction does not impermissibly attempt to “confine” the term to “embodiments” of the invention as AB/Sciex argues. (*E.g.*, AB/Sciex Op. Br. at 17.) Rather, the ordinary meaning of the “separated” claim language itself “confines” the term, and the specification is wholly consistent with this limitation. AB/Sciex simply claimed no more broadly than what it disclosed. Nor would there be support for any broader claim. *See Norian Corp. v. Stryker Corp.*, 05-1172, slip op. at 5 (Fed. Cir. Dec. 6, 2005) (“Although the word ‘a’ generally means ‘one or more’ in open-ended claims containing the traditional phrase ‘comprising,’ that general rule does not apply when the specification or the prosecution history shows that the term was used in its singular sense.”) (internal citation omitted) (TB 108.) The '736 patent specification uniformly teaches that there is one wall — which the specification calls a “separator plate” — with an “interchamber” orifice in it that “connects” the first and second vacuum chambers. For example, the specification states: “The [first of the vacuum chambers] is connected by an interchamber orifice [ ] in a separator plate [ ] to a second vacuum chamber.” (JA 17, '736 patent, 4:24-26) This is not an “example” of the invention; it *is* the invention “[i]n one of the invention’s broadest aspects,” or at least a necessary part of it. (*See* JA 16, '736 patent, 1:55-58, describing “one of the broadest aspects” of the invention.) There is no example in the specification where the first and second vacuum chambers are separated by a wall/orifice in any sense other than the wall/orifice forming the common boundary of the two chambers.



The Federal Circuit's recent *en banc* decision in *Phillips*, as well as cases decided after *Phillips*, make clear that this is the appropriate use of the '736 patent's specification. This case law was, of course, not available to Judge McKelvie for purposes of the claim constructions in *Micromass*. These decisions are available now, however, and they clarify the difference between incorrectly importing aspects of embodiments into a claim and correctly reading claims in light of the teaching of the specification. For example, *Phillips* states:

Much of the time, upon reading the specification . . . it will become clear whether the patentee is setting out specific examples of the invention to accomplish those goals, or whether the patentee instead intends for the claims and the embodiments in the specification to be strictly coextensive.

*Phillips*, 415 F.3d at 1323.

The post-*Phillips* cases of *Nystrom v. TREX Co.*, 424 F.3d 1136 (Fed. Cir. 2005) and *Aquatex* illustrate the application of this principle. Again, in *Aquatex*, the Federal Circuit held that the claim term "fiberfill" was limited to synthetic materials where the examples of "fiberfill" provided in the specification were "all synthetic or man-made materials." 419 F.3d at 1378, 1381-82. Similarly, *Nystrom* instructed that the specification "frames the invention," and that the way that a claim term is "consistently used" in the specification can support a narrow understanding of its meaning. *Nystrom*, 424 F.3d at 1143, 1145. Hence, even though the claim term "board" could simply indicate "[a] flat piece of . . . rigid material adapted for a special use," and even though some claim language suggested that the claim term "'board' should not be limited to wood that is cut from a log," "[a]n examination of the term 'board' in the context of the written description and prosecution history . . . le[d] to the conclusion that the term 'board' must be limited to wood cut from a log." *Nystrom*, 424 F.3d at 1143-44. As *Nystrom* explained:

What *Phillips* now counsels is that in the absence of something in the written description and/or prosecution history to provide explicit or implicit notice to the public — i.e., those of ordinary skill in the art — that the inventor intended a disputed claim term to cover more than

the ordinary and customary meaning revealed by the context of the intrinsic record, it is improper to read the term to encompass a broader definition simply because it may be found in a dictionary, treatise, or other extrinsic source.

424 F.3d at 1145 (emphasis added).

*Aquatex* and *Nystrom* further approve Thermo's reliance upon dictionary definitions to confirm the meaning "revealed by" the specification. *See Aquatex*, 419 F.3d at 1381-82 (finding that "technical dictionaries" "suppor[t] construing 'fiberfill' as a purely synthetic fiber because it is consistently defined as such"); *Nystrom*, 424 F.3d at 1145-47 (rejecting an effort "to broaden the term 'board' to encompass relatively obscure definitions" beyond "the ordinary meaning of 'board' as a 'piece of sawn lumber,'" and using dictionary to define "convex" where such definition was consistent with the specification); *see also Nystrom*, 424 F.3d at 1145 ("In *Phillips*, we held that the term 'baffle' did not require any specific angle . . . because the ordinary meaning of the term 'baffle,' as reflected in a dictionary definition to which the parties stipulated and as supported by the overall context of the written description, was simply 'objects that check, impede, or obstruct the flow of something.'"). Like the '736 patent's specification, the ordinary dictionary definition of "separated" confirms that the phrases "separated by a wall" and "separated by an interchamber orifice" mean that the wall/orifice forms the common boundary of the claimed chambers.

#### B. "Means for Generating Ions of a Trace Substance to Be Analyzed"

'736 Term	Claims	Thermo Proposal	AB/Sciex Proposal
<u>means for generating ions of a trace substance to be analyzed</u>	1	<p>1c. The corresponding structure is an electric discharge needle, electrospray source, or other ionization source operating at approximately atmospheric pressure that is not after-developed technology.</p> <p>2. "Trace substance" means matter that is present in a small amount or as a small fraction of a sample.</p>	<p>1c. The corresponding structure, material, or acts described in the specification is an electric discharge needle, electrospray source or other ionization source operating at approximately atmospheric pressure.</p> <p>2. "trace substance": no construction needed.</p>

AB/Sciex has not disputed Thermo's proposed construction of the term "trace substance" or the law that underlies the "not after-developed technology" language in Thermo's proposed construction of "means for generating . . . ." However, AB/Sciex's reference to "Thermo's accused instruments" in an effort to support AB/Sciex's proposed construction is improper. (AB/Sciex Op. Br. 42-43.) Such reference is contrary to the well-established rule that claims are to be construed without reference to accused devices. *See, e.g., Young Dental Mfg.*, 112 F.3d at 1141 ("[C]laim scope is . . . determined without regard for the accused device.").

**C. "Means ... for Directing," "Means for Flowing," and "Means for Maintaining" Limitations**

'736 Term	Claims	Thermo Proposal	AB/Sciex Proposal
means ... for directing said ions through said inlet orifice into said first vacuum chamber	1	The corresponding structures include "curtain gas plate 22," "orifice plate 28," and "rod set 32."	The corresponding structure, material, or acts described in the specification is either, or both, of two independent operating parameters: (1) the application of appropriate DC potential between the inlet orifice and the rod set in the first vacuum chamber; and/or (2) a difference in the pressures on either side of the inlet orifice.
means for maintaining the kinetic energies of ions moving from said inlet orifice to said first rod set at a relatively low level	1	The corresponding structures include "curtain gas plate 22," "orifice plate 28," and "rod set 32."	The corresponding structure, material, or acts described in the specification is the application of two variables: (1) a DC potential voltage between the inlet orifice and the first rod set, and (2) the pressure in the first vacuum chamber.
means for flowing gas through said inlet orifice into said first space	1	The corresponding structures include "curtain gas source 42," "duct 44 to the curtain gas chamber 24," "curtain gas chamber 24," "orifice plate 28," "orifice 26," "vacuum pump 31," and "vacuum chamber 30."	The corresponding structure, material, or acts described in the specification is the existence of gas in a chamber, separated from the first vacuum chamber by the inlet orifice, at a higher pressure than that in the first vacuum chamber.

Contrary to AB/Sciex's proposed constructions for various "means for" limitations, "operating parameters" such as voltages and pressure differentials cannot qualify as "corresponding structure" for means-plus-function limitations. *Cf. O.I. Corp. v. Tekmar Co., Inc.*, 115 F.3d 1576, 1582-83 (Fed. Cir. 1997) (noting that structure or material is required to implement a means-plus-function apparatus element). Further, "pressure differentials" are not "clearly linked" to the "directing" and "maintaining" functions of claim 1's "means ... for directing said ions" and "means

for maintaining the kinetic energies of ions” in the first place. (*Compare* Thermo Op. Br. 35-38 with AB/Sciex Op. Br. 19-28.)

AB/Sciex nonetheless suggests that AB/Sciex’s proposed constructions should be adopted because they were “adopted by the Court in the *Micromass* case.” (AB/Sciex Op. Br. 20, 24, 25.) Even in accordance with Judge McKelvie’s opinion for this Court in *KX Industries*, however, the *Micromass* Court’s “corresponding structure” determinations are not owed deference here because Thermo “raise[s] new arguments” in the form of claim constructions that *Micromass* did not propose. 108 F. Supp. 2d at 387. Nor were the prior claim constructions appealed to the Federal Circuit. Moreover, even if the *Micromass* Court’s determinations were owed deference, they would have to be rejected because, as is, they reflect a fundamental misunderstanding of 35 U.S.C. § 112, ¶ 6 — namely, an incorrect belief that “acts,” “conditions,” and “parameters” can constitute “corresponding structure” for a means-plus-function limitation. *Cf. KX Indus.*, 108 F. Supp. 2d at 387-91 (recognizing error in prior construction).

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<sup>6</sup> Consistent

with both parties' misstatements of means-plus-function law, the *Micromass* Court erroneously issued claim constructions which identified acts, operating parameters, and operating conditions as "structure."<sup>7</sup>

The parties' representations to the *Micromass* Court regarding means-plus-function law were manifestly wrong, and the Court's constructions were correspondingly incorrect as a matter of law. The Federal Circuit has made clear that means-plus-function limitations, as opposed to step-plus-function limitations, must be supported by "corresponding structure" or "material," not acts or operating parameters:

The word "means" clearly refers to the generic description of an apparatus element, and the implementation of such a concept is obviously by structure or material... In [§ 112, ¶ 6], structure and material go with means, acts go with steps.

*O.I. Corp. v. Tekmar Co., Inc.*, 115 F.3d 1576, 1582-83 (Fed. Cir. 1997); *see also Seal-Flex, Inc. v. Athletic Track & Court Constr.*, 172 F.3d 836, 842-43 (Fed. Cir. 1999) ("'structure' and 'material' are associated with means-plus-function claim elements while 'acts' is associated with step-plus-function claim elements"); *Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1259 (Fed. Cir. 1999) (identifying corresponding acts in step-plus-function claim element); *Fonar Corp. v. Gen.*

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<sup>7</sup> AB/Sciex now seeks to distance itself from the very misapplication of law that it encouraged. In an apparent attempt to shift responsibility for flaws in the prior constructions to the Court, AB/Sciex now explains:

The Court used the statutory language "corresponding structure, material or acts" in its constructions of the means-plus-function limitations in its *Markman* opinion in the *Micromass* litigation. Therefore, AB/Sciex uses that formulation here.  
(AB/Sciex Op. Br. 20.)

*Elec. Co.*, 107 F.3d 1543, 1551 (Fed. Cir. 1997) (“An apparatus claim requires definite structure in the specification to support the function in a means clause.”); *cf. Med. Instrumentation & Diagnostics Corp. v. Elekta A.B.*, 344 F.3d 1205, 1212 (Fed. Cir. 2003) (“The ‘Image Format Conversion’ box in Figure 1 of both patents is not a depiction of structure. This figure is described as illustrating the steps of the preferred *method* of the invention, not the structure of the apparatus that is the subject of the asserted claims.”) (emphasis in original)). Because (1) “operating *parameters*,” (2) “the *application* of two variables,” and (3) “the *existence* of gas” describe conditions or acts, not “structure” or “material,” the *Micromass* Court’s claim constructions failed to identify the corresponding structures or material required by § 112, ¶ 6.

AB/Sciex’s computer-related means-plus-function cases — described in a footnote in AB/Sciex’s brief (AB/Sciex Op. Br. 21 n.12) — are not to the contrary. The fact that a type of software, *Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1377 (Fed. Cir. 2003); *Globetrotter Software, Inc. v. Elan Computer Group, Inc.*, 236 F.3d 1363, 1367-70 (Fed. Cir. 2001), or a type of pulse (the “generic gradient waveform” of *Fonar*, 107 F.3d at 1551-52), might be found to constitute “corresponding structure” for a computer-implemented function has nothing to do with this case, where none of the claimed functions are claimed to be computer-implemented. It is true that “corresponding structure” need not be “hardware,” but AB/Sciex’s proposed corresponding structures include neither hardware nor software. Moreover, even in the computing arts, the corresponding structure for a means-plus-function limitation is generally found not to be “software” alone or an algorithm *per se*, but instead the hardware which is loaded with, and running, the software, such as “the special purpose computer programmed to perform the disclosed algorithm.” *WMS Gaming, Inc. v. Int’l Game Tech.*, 184 F.3d 1339, 1348 (Fed. Cir. 1999) (narrowing a district court determination “that the structure disclosed in the specification to perform the claimed function was ‘an algorithm executed by a computer’”).

The technical criticisms that AB/Sciex directs at Thermo's proposed identification of corresponding structures are similarly meritless. First, AB/Sciex argues that Thermo's proposed constructions for the "means . . . for directing" and "means for maintaining" limitations omitted structure related to pressure differentials. (AB/Sciex Br. at 21-22, 27-28.) Indeed, Thermo has omitted the structures — "curtain gas source 42," "duct 44 to the curtain gas chamber 24," "curtain gas chamber 24," "vacuum pump 31," and "vacuum chamber 30" — that produce such "pressure differentials," because the patent never clearly links them to performing the claimed function. Thermo omits these structures because binding Federal Circuit precedent says that such "corresponding structures" under § 112, ¶ 6 must not only be able to perform the recited functions, but must also be clearly linked to performance of those functions by the patent's specification or prosecution history. *See Medtronic, Inc. v. Advanced Cardiovascular Sys., Inc.*, 248 F.3d 1303, 1311 (Fed. Cir. 2001) (agreeing that disclosed structures were each "capable of performing the recited function," but finding that they were not "clearly linked or associated with the function"); *see also Med. Instrumentation & Diagnostic*, 344 F.3d at 1220 (resisting "tempt[ation] to say that this patentee should not be required to turn square corners when it comes to disclosing structure" because "[t]he public should not be required to guess as to the structure for which the patentee enjoys the right to exclude").

AB/Sciex's second criticism of Thermo's proposed constructions is that they do not expressly include the corresponding structures in Figure 12's alternative embodiment. Aside from concern that additional structures in the Figure 12 embodiment may not be "clearly linked" by the specification to the recited functions, Thermo has no objection to their inclusion as part of a list of alternative corresponding structures. If the Court is inclined to include Figure 12 structures explicitly in its constructions, the relevant lists of alternative structures would include:

- for "means . . . for directing" and "means for maintaining": "skimmer 74" and the primed variants (e.g., 32' for 32) or unprimed variants (e.g., 42 for 42) of



corresponding structures in the Figure 1 embodiment (plus “pump 78” and “chamber 70” if pressure-related structures are included);

- for “means for flowing”: “skimmer 74,” “skimmer orifice 76,” “pump 78,” “chamber 70,” and the primed variants (e.g., 32’ for 32) or unprimed variants (e.g., 42 for 42) of corresponding structures in the Figure 1 embodiment.

(JA 19-20, ’736 patent, 8:60 to 9:5, fig. 12.) See *Ishida Co. v. Taylor*, 221 F.3d 1310, 1316 (Fed. Cir. 2000) (“Neither *Serrano* nor *Micro Chemical* requires the district court to formulate a single claim interpretation to cover multiple embodiments. Rather, § 112, ¶ 6 requires only identification of the structure, or structures, in the specification that perform the recited function.”).

Third, with respect to “means for directing said ions” and “means for maintaining the kinetic energies of ions,” AB/Sciex criticizes Thermo’s proposed constructions for including structures that, according to AB/Sciex, do not themselves directly “cause” ions to move, but instead require additional “causes” such as the application of DC voltages. (E.g., AB/Sciex Op. Br. at 23, “[O]rifice plate 28 and rod set 32 do not themselves cause ions to enter the first vacuum chamber. DC voltages must be applied to them.”); accord AB/Sciex Op. Br. at 27.) The crux of AB/Sciex’s argument seems to be that Thermo has not cited voltage sources themselves as corresponding structure, but the patent specification itself does not identify or describe any voltage sources, let alone “clearly” link such to the claimed function.

Similarly, as to “means for flowing gas,” AB/Sciex complains:

The elements Thermo identifies are not themselves the cause of gas flow through the inlet orifice. That does not occur unless and until the gas in the curtain gas chamber . . . is at a higher pressure than the “first vacuum chamber.”

(AB/Sciex Op. Br. at 25.) This argument is similarly legally unfounded. Thermo has properly identified “curtain gas source 42” and “duct 44 to the curtain gas chamber 24,” as well as “vacuum pump 31,” as corresponding structures that cause this gas flow. As the specification explicitly states, “[a]n inert curtain gas is . . . supplied via a curtain gas source 42,” and then “flows through orifice 26 into the first vacuum chamber 30.” (JA 17, ’736 patent, 4:29-33.)



AB/Sciex's arguments about what elements "cause" a particular result confuse structure that is sufficient to perform a function with additional "enabling" structures or conditions that are necessary actually to achieve a result. Using a toaster as an example, the Federal Circuit has explained the error in AB/Sciex's argument, noting in particular that "enabling" structure is not necessarily "corresponding" structure:

An electrical outlet enables a toaster to work, but the outlet is not for that reason considered part of the toaster. The corresponding structure to a function set forth in a means-plus-function limitation must actually perform the recited function, not merely enable the pertinent structure to operate as intended ....

*Asyst Techs., Inc. v. Empak, Inc.*, 268 F.3d 1364, 1371 (Fed. Cir. 2001).

Finally, AB/Sciex criticizes Thermo for including "curtain gas plate 22" as among the corresponding structures for the "means ... for directing" and "means for maintaining" limitations (AB/Sciex Op. Br. at 22, 26-27). Thermo has included this structure because the specification explicitly links curtain gas plate 22 to the function of "drift[ing]" ions through the inlet orifice 26 into the first rod set 32 (JA 17, '736 patent, 4:38-42.) The specification states:

Ions produced in the ionization chamber 16 are drifted by appropriate DC potentials on plates 22, 28 and on the AC-only rod set 32 through opening 20 and orifice 26, and then are guided through the AC-only rod set 32 and interchamber orifice 34 into the rod set 40.

(JA 17, '736 patent, 4:38-42.) Given this disclosure, Thermo does not understand how AB/Sciex can assert that "[t]he specification *nowhere* associates the curtain gas plate [22] with [the recited] function" of "maintaining the kinetic energies of ions moving from the inlet orifice to the first rod set at a relatively low level." (AB/Sciex Op. Br. at 26-27) (emphasis added).

#### D. "Rod," "Rod Set," "Rod Means," and "Parallel Rod Means"

'736 Term	Claims	Thermo Proposal	AB/Sciex Proposal
rod set	1, 14	a number of rods of the same kind that belong or are used together. This is in accordance with the meaning of "set," which means a number of things of the same kind that belong or are used together.	two or more rods.

'736 Term	Claims	Thermo Proposal	AB/Sciex Proposal
Rod	1, 14	a "slender bar" that is, in accordance with the meaning of "slender," narrow in circumference in proportion to its length, and substantially longer than it is wide.	"an electrode having a length along an ion path that produces an external electrical field over that length when a voltage is applied."
rod means	1	<p>"rod means" is a means-plus-function limitation subject to 35 U.S.C. § 112, ¶ 6.</p> <p>The function is to define an elongated space therebetween.</p> <p>The corresponding structures are four 15-cm quadrupole mass spectrometer rods that are not too short as described in the specification.</p>	"rod means" means "rods" and therefore requires no construction separate from the construction of "rods."
rod means	14	<p>"rod means" is a means-plus-function limitation subject to 35 U.S.C. § 112, ¶ 6.</p> <p>The function is defining longitudinally extending first and second spaces, respectively.</p> <p>The corresponding structures are four 15-cm quadrupole mass spectrometer rods that are not too short as described in the specification.</p>	"rod means" means "rods" and therefore requires no construction separate from the construction of "rods."
"parallel rod means"	1	<b>rod means</b> that extend in the same direction and everywhere equidistant.	<b>rods</b> that extend in the same direction and everywhere equidistant.

AB/Sciex's clear intention is to remove any limiting effect of the claims' "rod" and "rod means" language. Under AB/Sciex's constructions:

- "Rod" is transformed into any "electrode," or even more broadly to any "other open structure" (whatever that means) (AB/Sciex Opening Br. at 30).
- A "set" of rods is transformed into a mere plurality of (two or more) rods, rather than a plurality of rods that belong or are used together, *i.e.*, that work as a "set."
- The "means" aspect of "rod means" is eliminated completely as AB/Sciex argues that the word "means" is superfluous.

### 1. "Rod"

AB/Sciex's current construction of "rod" is another attempt by AB/Sciex to retract concessions that it made to Judge McKelvie. Currently, AB/Sciex argues that the term "rod" has a

“specialized meaning in the field of mass spectrometry.” (AB/Sciex Opening Br. at 28.) This is exactly the opposite of the argument that AB/Sciex made to Judge McKelvie.

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At the *Markman* hearing in the *Micromass* case, AB/Sciex further conceded that “rod” denoted a particular shape, and that electrodes without that shape are not rods. Micromass had argued that its accused “ion tunnel” structure contained electrodes that were too short to constitute “rods.” (TB 41, *Markman* Hearing Tr.) In response, AB/Sciex *agreed*: “In terms of the ion tunnel issue . . . [w]e don’t contend that there is literal infringement.” (*Id.* at TB 42.) (*Accord* TB 47, AB/Sciex App. Br.) (conceding that an “ion tunnel” is not literally a “rod set.”)

Judge McKelvie agreed with AB/Sciex’s characterization. He stated in his *Markman* ruling,

A rod set is a group of electrodes (four in a quadrupole, six in a hexapole, etc.) *shaped as rods*, spaced equally apart to define an *elongated* central space.

196 F.Supp. 2d at 493 (emphasis added.)

Consistent with AB/Sciex’s concession that rods are electrodes having a particular “form” or “shape[]” that was “obvious” without further construction, Judge McKelvie ultimately ruled:

Micromass argues that ‘rod set’ must be comprised of just that — rods — and that *other shapes of electrodes, such as the rings . . . cannot infringe the claims. . . AB/Sciex agrees* but believes such a construction by the court to be unnecessary because ‘*a rod is a rod.*’ The court agrees . . . .”

186 F. Supp. 2d at 508 (emphasis added).

Thus, AB/Sciex's current position contradicts both the arguments it made to Judge McKelvie, and Judge McKelvie's rulings, all of which are binding on AB/Sciex. AB/Sciex's current position on the meaning of "rods" even contradicts arguments that AB/Sciex is making now in other parts of its Opening Brief to this Court. At pages 47-49 of its Opening Brief, AB/Sciex presents a schematic of an ion trap that contains a "ring electrode" and two "end cap electrodes," and AB/Sciex then goes on to argue that these electrodes are "non-rod set structure[s]." (AB/Sciex Op. Br. at 47-49 & n.18.) In other words, at pages 47-49 of its Brief, AB/Sciex argues that the "ring electrode" and the two "end cap electrodes" depicted in the ion trap figure are not "rods." Yet all three electrodes have "a length along an ion path," and are therefore "rods" according to AB/Sciex's proposed claim construction. (AB/Sciex Opening Br. at 47; *see also* JA 281, 295.) This is but one example of how meaningless AB/Sciex's proposed definition of "rod" is. Under AB/Sciex's proposed definition, electrodes that are admittedly "non-rods" meet the "specialized meaning" of "rods."

AB/Sciex provides no evidence to support a result. While asserting that the proffered ordinary dictionary definition of "rod" as "a slender bar" does not apply (AB/Sciex Opening Brief, at 28-29), AB/Sciex does not cite even one reference in support of its alleged "specialized" meaning.<sup>8</sup> Nor does AB/Sciex support this alleged meaning by reference to the specification. *Cf. Aquatex*, 419 F.3d at 1380 ("Where, as here, the disputed claim term is technical or a term of art, '[t]he best source

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<sup>8</sup> AB/Sciex quotes a portion of the '420 patent in supposed support of AB/Sciex's contention that, within mass spectrometry, the term "rod" generally includes "groups of open wires or other open structure which produces a quadrupole type field." (AB/Sciex Op. Br. at 29-30.) As a more complete quotation from the '420 patent reveals, however, the quoted material at most represents an instance of a patentee acting as lexicographer (*i.e.*, adopting a definition that need not conform to *any* recognized definition, in the art or elsewhere) for purpose of the '420 patent's "appended claims." (JA 117, '420 patent, 8:48-51 ("[T]he term 'rods' in the appended claims refers to any groups of open wires or other open structures which produces a quadrupole type field." (emphasis added)). The quoted material thus provides no support for AB/Sciex's contention regarding what was generally understood in the art. AB/Sciex points to no evidence that the '736 patent's inventors acted as lexicographers to define "rod" in a way different from both its ordinary meaning and its consistent usage in the '736 patent's specification.

for understanding [it] is the specification from which it arose, informed, as needed, by the prosecution history.”). A brief Google search on the web shows that AB/Sciex’s construction is baseless: the term “rod” is consistently used in the industry in accord with its ordinary, non-technical meaning. (See TB 65, RPW Scott, “*Gas Chromatography-Tandem Techniques*”; TB 70, Extrel Core Mass Spectrometers, “*Quadrupole Mass Filters*”; TB 80, Pfeiffer Vacuum, “*Mass Spectrometer 05 06 07*”; TB 94, Waters Corp., “*The Mass Spectrometer: Instrument Architectures and Main Characteristics*.”)

Post-*Phillips* cases specifically hold that general purpose dictionary definitions may define non-technical terms, if such definition is consistent with the specification. See, e.g., *Nystrom*, 424 F.3d at 1145-47 (citing dictionary definitions for “board” and “convex,” and explaining how *Phillips* used a “dictionary definition”). That is all that Thermo suggests here. All of the “rod” structures described in the ’736 specification (including those that AB/Sciex cites in its Opening Brief) are slender bars. Likewise, all of the rods in the ’420 patent cited by AB/Sciex are also “slender bars,” including even the “open structure rod” that AB/Sciex cites at page 29 of its Opening Brief. This structure (see Figure 12 from the ’420 patent) meets the ordinary definition of “rod”; it is a long, slender bar that is narrow in circumference in proportion to its length and substantially longer than it is wide. To the extent that AB/Sciex suggests that this rod is different because it is an “open” structure, nothing in Thermo’s proposal precludes a rod from being “open” or “perforated.” The ordinary meaning of “rod” or “bar” makes no distinction between “open” or “closed” structures.

Finally, AB/Sciex’s citation of the ’420 patent and ’736 patent, 13:20-22, for the proposition that rods can be, relatively speaking, “short” and/or of “reduce[ed]” length (AB/Sciex Op. Br. at 29-30) is irrelevant. A rod the size and shape of a sewing pin is “short,” in comparison with a standard fishing rod, but it is still a rod because it is substantially longer than it is wide.

## 2. "Rod set"

According to AB/Sciex, Judge McKelvie ruled that the term rod "set" means "two or more rods." (AB/Sciex Op. Brief at 31.) This assertion is inaccurate.

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Judge McKelvie disagreed: "[T]he court finds that the term 'rod set' in the claims of the '736 patent require only a plurality, meaning two or more of rods in each rod set and do not require a quadrupole." 186 F. Supp. 2d at 508 (IA 506). This part of Judge McKelvie's ruling defines neither "rod" nor "set." It merely rejects the argument (which Thermo is not making) that the term "rod set" itself means a rod set with exactly four rods.<sup>9</sup>

To the extent that Judge McKelvie addressed the issue at all, his rulings are consistent with the conclusion that a "rod set" requires a grouping of similar rods. Judge McKelvie held that "[a] rod set is a *group* of electrodes (four in a quadrupole, six in a hexapole, etc.) shaped as rods . . . spaced equally apart." 186 F.Supp.2d at 493 (emphasis added.) Judge McKelvie's ruling, and particularly its use of the terms "group" and "equally," indicates his understanding that a "rod set" consists of rods that are specifically grouped together for a distinct purpose, *e.g.*, to form a quadrupole or a hexapole. This is consistent with the ordinary meaning of "set," which is a grouping of things that "belong or are used together." (See TA 161, *Webster's Ninth New Collegiate Dictionary* (1988) (defining "set" as "a number of things of the same kind that belong to or are used together"; TA 139, *American Heritage Dictionary of the English Language* (1982) (defining "set" as "(1. A group of persons or things connected by or collected for their similar appearance, interest, importance, or the like . . . ."); TA 181, *Webster's Third New International Dictionary* (1986) (defining "set" as "a group of articles of uniform design," or "an assortment of tools or instruments of identical kind").)

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<sup>9</sup> However, the corresponding structure for the term "rod means" is four rods. (See *infra* at 32-34.)

Under AB/Sciex's construction, a number of different rod sets within one device could all be one "rod set," even though, according to ordinary understanding, they are really a *series* of distinct rod sets. The process of making this distinction has nothing to do with golf clubs or tool boxes as AB/Sciex asserts (AB/Sciex Op. Br. at 32), but instead has to do with how "rod sets" are ordinarily understood in mass spectrometry. Take, for example, the figure shown at page 11 of AB/Sciex's Opening Brief.

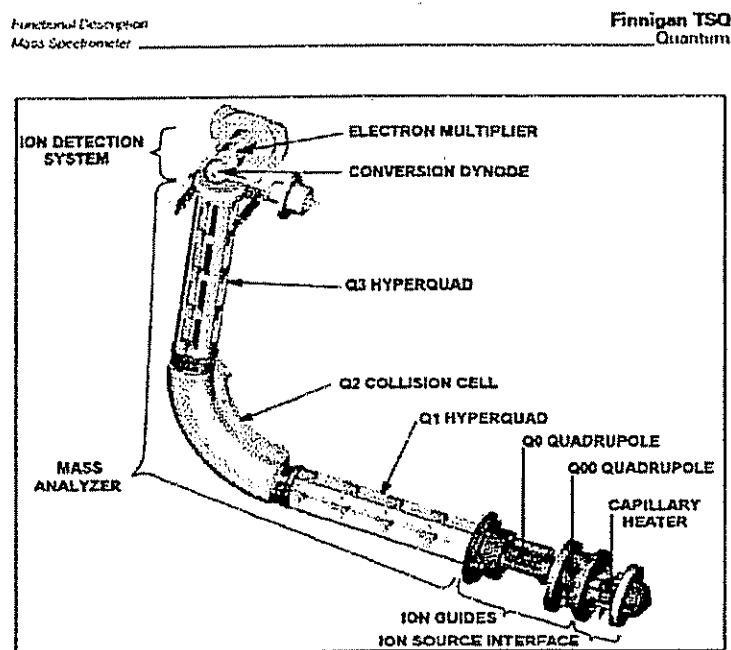


Figure 2-16. Internal (under vacuum) mass spectrometer components

Here, the mass analyzer chamber contains three separate "rod sets": "Q1 Hyperquad," "Q2 Collision Cell," and "Q3 Hyperquad." These are three distinct structures (three different groups of rods) that perform three distinct functions within the mass analyzer chamber. Under no reasonable construction could these three distinct structures be considered one, single "rod set." Yet under AB/Sciex's proposal, all of these distinct structures could be so considered because AB/Sciex's proposed construction eliminates the meaning of "set" from the claims.



### 3. “Rod means”

AB/Sciex’s Opening Brief does not even mention, let alone attempt to overcome, the legal presumption that “rod means” is a means-plus-function limitation. (AB/Sciex Op. Br. at 30-31.) Although the word “rod” itself connotes some structure, such structure is not sufficiently specific in this case to overcome the presumption, because the specification teaches that only rods of a particular structure can perform the recited function. In the patent claims, the use of the term “rod means” — instead of the broader term “rods” — reflects that teaching from the specification. The inventors could have chosen to use the word “rods,” rather than “rod means.” They did not. Instead, they used means-plus-function format to claim the narrower term “rod means.” See *Unidynamics Corp. v. Automatic Prods. Int’l, Ltd.*, 157 F.3d 1311, (Fed. Cir. 1998) (finding that “[t]he recitation of the word ‘spring’ [in ‘spring means tending to keep the door closed’] does not vitiate the patentee’s choice” of “means-plus function formation invoking § 112, ¶ 6 construction”).

AB/Sciex asserts that Thermo’s proposed construction is wrong because claim terms should not be “restricted to examples” from the specification. (AB/Sciex Opening Br. at 31.) AB/Sciex’s general statement of the law is correct, but it has no application to the means-plus-function question presented here. Means-plus-function claims are limited by law to “the disclosed structure” (and equivalent or insubstantially different structures) and cannot be read broadly to cover “any structure that performs the recited function.” *Ballard Med. Prods. v. Allegiance Healthcare Corp.*, 268 F.3d 1352, 1361 (Fed. Cir. 2001). Here, the specification discloses four quadrupole rods that are 15 cm long. Accordingly, that is the corresponding structure covered by the claims. The fact that other types of “rods” might perform the function is irrelevant, because no such rods are disclosed in the specification. Restriction to corresponding structures in the specification, plus their equivalents, is part of the bargain that AB/Sciex made with the PTO for the convenience of using the means-plus-function patent claim format. See *Kahn v. General Motors Corp.*, 135 F.3d 1472, 1476 (Fed. Cir.



1998) (“The duty to link or associate structure in the specification with the function is the *quid pro quo* for the convenience of employing § 112, ¶6.”).

Regardless of such particular details regarding the disclosed rods (*i.e.*, that they are 15 cm long quadrupole rods), the specification emphasizes that rods are “not too short.” (JA 22, ’736 patent, 13:9-12.) This requirement is not an “example” of how to practice the patent, but rather is a disclosure of structure that is necessary to perform the invention. (*Id.*) To omit the limitation “not too short” from the corresponding structure for “rod means” would eliminate this key structural limitation from the patent.

#### E. “Elongated Parallel Rod Means Spaced Laterally Apart a Short Distance”

’736 Term	Claims	Thermo Proposal	AB/Sciex Proposal
each rod set comprising a plurality of <u>elongated parallel rod means spaced laterally apart a short distance from each other to define an elongated space therebetween extending longitudinally through such rod set</u>	1	1. “elongated” means “stretched out” and having a form notably long in comparison to its width.”  2. “spaced laterally apart a short distance” means that the rod means are separated by a distance substantially less than the length of each elongated rod.	1. “elongated” means having a length that exceeds its width.  2. “spaced laterally apart a short distance” requires no construction.

AB/Sciex’s proposed construction of “elongated” is contrary to plain meaning, which requires that something “elongated” be “**notably long** in comparison to its width” (TA 175, *Webster’s Third New International Dictionary* (1986) (emphasis added).) No one would say that something that is just a bit longer than it is wide (such as a typical postage stamp) is “elongated.” AB/Sciex’s proposed construction also makes the term “elongated” superfluous in light of the claims’ separate use of the terms “rod” and “rod means.” “Rod” and “rod means” are already structures longer than they are wide. Thus, to have meaning within the context of the claims, “**elongated** parallel rod means” must be structures that are even longer.

AB/Sciex’s proposed constructions also ignore that a claim term such as “short” is necessarily a relative one, inviting the question, “Short as compared to what?” Here the claim

language itself provides the answer: the “short” distance that rods are spaced apart is relative to the “elongated” rods, *i.e.*, the rods are spaced apart a distance less than the length of the rods.

**F. “Space ... Extending Longitudinally” and “Longitudinally Extending Spaces”**

'736 Term	Claims	Thermo Proposal	AB/Sciex Proposal
space ... <u>extending longitudinally</u> through such rod set [claim 1]	1, 14	space that runs lengthwise down the rods, and that is longer than it is wide.	space that runs lengthwise down the rods
<u>longitudinally extending first and second spaces</u> [claim 14]			

AB/Sciex’s current arguments regarding the claims’ “extending longitudinally” requirements contradict AB/Sciex’s arguments in the *Micromass* case. In that case,

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AB/Sciex thus represented to the Court that the term “longitudinally extending” is synonymous with the word “elongated.” Given what AB/Sciex advocated to Judge McKelvie, AB/Sciex’s current assertion that Thermo’s proposed construction for “longitudinally extending . . . spaces” “has no basis in the words ‘space,’ ‘extending,’ or ‘longitudinally,’” or in “the intrinsic evidence” (AB/Sciex Op. Br. at 35) strains good faith.

Thermo believes that AB/Sciex correctly represented the meaning of “longitudinally extending” to the *Micromass* Court. But now AB/Sciex seeks to eliminate the limitation requiring that the “longitudinal” space also be “extended.” The effect would be effectively to eliminate the limitations “extending longitudinally” (claim 1) and “longitudinally extending” (claim 14) from the claims.

**G. “Located End to End”**

'736 Term	Claims	Thermo Proposal	AB/Sciex Proposal
located end to end	1, 14	No construction necessary in light of construction of “aligned.”	the rod sets and spaces must be arranged in a manner that ions may be successfully transmitted from the end of the first rod set or the first space to the end of the second rod set of second space.

AB/Sciex's current position regarding the meaning of "located end to end" contradicts

AB/Sciex's assertion in the *Micromass* case that — as Thermo now suggests here (Thermo Op. Br. at 47) —

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Regardless, Thermo sees no point to arguing further about whether construction of "located end to end" is necessary. Thermo has no objection to AB/Sciex's proposed construction as a matter of substance, and leaves it to the Court's discretion to determine whether that construction will be helpful to a jury.

#### H. "Means for Applying . . . Voltage[s]"

'736 Term	Claims	Thermo Proposal	AB/Sciex Proposal
means for applying essentially an AC-only voltage between the rod means of said first rod set	1	Although the specification discloses rods between which AC [and DC] voltages are applied, the specification does not disclose any structure for applying [both AC and DC voltages] between the rod means. Hence, the specification does not disclose the corresponding structure required for construction of this limitation under § 112, ¶ 6. This limitation and claim 1 are therefore indefinite.	The corresponding structure, material, or acts is described in the specification are the rods of rod set 32 [and 40] and, as is well known to those skilled in the art, an AC [and DC] power supply connected to the rods
means for applying both AC and DC voltages between the rod means of said second rod set so that said second rod set may act as a mass filter			

AB/Sciex effectively concedes that the '736 patent's specification discloses no "corresponding structure" for either of its "means for applying voltage[s]" limitations. AB/Sciex first argues that the rods themselves are the means for applying voltages to the rods. This makes no sense and is incorrect on the face of the patent. The "rods" are never described as applying voltages to themselves, a physical impossibility. The rods are, instead, the structures to which voltages are applied. If the claims read "means for *receiving* voltages," then AB/Sciex would at least have an argument; however, that is not what the claims say.

By way of contrast, note, for example, how Thermo's '784 patent and AB/Sciex's other, '420 patent (which is cited in the '736 patent) identify structure for applying voltages. In both cases, the patent specification identifies voltage sources and wires that are "means for applying" voltages. (*See* JA 110, 116, 118, '420 patent, fig. 6; 6:9-18; 9:56-65; JA 593, 602-603, '784 patent, fig. 1, 3:26-27, 5:2-9. Nothing like this is disclosed in the '736 patent.

AB/Sciex's further efforts to locate "corresponding structure" in the knowledge of those skilled in the art (AB/Sciex Op. Br. at 37) or in a cited reference (AB/Sciex Op. Br. at 41) are unfounded as a matter of law. *Default Proof Credit Card Sys., Inc. v. Home Depot U.S.A., Inc.*, 412 F.3d 1291, 1300-02 (Fed. Cir. 2005); *see also Atmel Corp. v. Info. Storage Devices, Inc.*, 198 F.3d 1374, 1382 (Fed. Cir. 1999) ("[W]e do agree with ISD that the district court properly held that the Dickson article may not take the place of structure that does not appear in the specification ...."). "Corresponding structure" for a means-plus-function limitation must be found in the specification itself. *Id.*

The cases that AB/Sciex cites for the proposition that its specification's disclosure is nonetheless sufficient (AB/Sciex Op. Br. at 38) say nothing of the sort. All of them involve situations in which the specification disclosed *some* corresponding structure. *S3, Inc. v. nVIDIA Corp.*, 259 F.3d 1364, 1368-71 (Fed. Cir. 2001) (black box labeled "SEL" and described as a "selector" in the specification was sufficient structure because a selector was "a well known electronic structure and performs a common electronic function"); *Atmel*, 198 F.3d at 1377, 1382 (figures depicting a "high-voltage generator circuit as a 'black box'" were sufficient structure given expert's testimony that persons skilled in the art would understand the "precise structure" being described); *In re Dossel*, 115 F.3d 942, 946 (Fed. Cir. 1997) (noting that although the specification did not use "the magic word 'computer,'" nevertheless, those skilled in the art would perceive the required structure in the description of, for example, a "device that receives digital data words from a memory"); *see also Med. Instrumentation & Diagnostics*, 344 F.3d at 1212-14 (Fed. Cir. 2003)

(contrasting the “selector” in S3, which “was clearly a type of structure,” with “the reference to ‘Image Format Conversion in the ‘846 and ‘684 patents,” which was merely a reference to “the steps of the preferred method of the invention, not the structure of the apparatus that is the subject of the asserted claims”) (emphasis in original)).

These cases merely stand for the proposition that the disclosure of structure can sometimes be general if the structure is well known in the art; they never say that disclosure of structure can be nonexistent. *See also Budde v. Harley-Davidson, Inc.*, 250 F.3d 1369, 1381-82 (Fed. Cir. 2001) (box in Figure labeled “vacuum sensor” was sufficient structure because vacuum sensors were “well known in the art”).

Indeed, in *Atmel*, the Federal Circuit took pains to emphasize that “[f]ulfillment of the § 112, ¶ 6 tradeoff *cannot be satisfied when there is a total omission of structure.*” 198 F.3d at 1382 (emphasis added). All of these cases are consistent with this fundamental principle, which the Federal Circuit recently reaffirmed in *Default Proof*. *See Default Proof*, 412 F.3d at 1302 (“[W]hile it is true that the patentee need not disclose details of structure well known in the art, the specification must nonetheless disclose some structure. Stated differently, the testimony of one of ordinary skill in the art cannot supplant the total absence of structure from the specification.”) (internal citation omitted).

#### I. “Essentially an AC-Only Voltage”

'736 Term	Claims	Thermo Proposal	AB/Sciex Proposal
means for applying <b>essentially an AC-only voltage</b> between the rod means [claim 1]	1, 14	a voltage between the rod means that is essentially AC-only voltage and that lacks any placed DC component that would cause the rod set to act as a mass filter.	allows for some DC component.
placing an <b>essentially AC-only RF voltage</b> between the rod means [claim 14]			

AB/Sciex defends its proposed constructions of “essentially an AC-only voltage” and “an essentially AC-only RF voltage” by arguing that the term “essentially” “allows for small deviations that do not change the basic nature of a thing” — *i.e.*, that in this case “allo[w] for some DC

component that does not change the basic nature of the first rod set as an ion guide.” (AB/Sciex Op. Br. at 45.) But AB/Sciex does not propose this construction. Instead, it proposes constructions that place *absolutely no limit on the DC component* that may be applied. Indeed, under AB/Sciex’s proposed constructions, the exception swallows the rule: even a DC voltage could be “an essentially AC-only voltage.”

AB/Sciex’s discussion of “the basic nature of the first rod set as an ion guide” begs the question as to what that “basic nature” is. As detailed in Thermo’s opening brief (Thermo Op. Br. at 50-51), the specification answers this question by *contrasting* use of “essentially an AC-only voltage” to “plac[ing] a small DC voltage between the rods 32” and thereby causing the rods to “act to some extent as a mass filter.” (JA 21-22, ’736 patent, 12:64 – 13:2.)

AB/Sciex correctly notes that the specification contrasts the preferred embodiment (applying “essentially an AC-only voltage”) with other possibilities (applying “a small DC voltage” to cause the rods to act “as a mass filter”). (AB/Sciex Opening Br. at 44.) The problem for AB/Sciex, however, is that the claim terms are expressly limited to the preferred embodiment. Both claim 1 and claim 14 claim an “essentially” AC-only voltage. The claims are thus (not unusually) narrower than the full range of potential embodiments disclosed by the specification. *See, e.g., PSC Computer Prods., Inc., v. Foxonn Int’l, Inc.*, 355 F.3d 1353, 1355-56 (Fed. Cir. 2004) (“[A] patent applicant who has disclosed but does not claim subject matter has dedicated that matter to the public and cannot reclaim the disclosed matter under the doctrine of equivalents.”).

#### J. “Mass Filter”

’736 Term	Claims	Thermo Proposal	AB/Sciex Proposal
mass filter	1, 14	a device that passes through ions of one or more select mass-to-charge ratios while filtering out ions of all other mass-to-charge ratios, <b>and which does not function as an ion trap.</b>	a device that passes through ions of one or more mass to charge ratios while filtering out ions of all other mass to charge ratios.

The construction of “mass filter” should reflect the clear line that AB/Sciex has itself repeatedly drawn, in proceedings before both the Patent Office and this Court itself, between (1) “the *claimed mass spectrometer*,” in which the mass analyzer is a “mass filter” (JA 173, Request for Reexamination) (emphasis added)) and (2) mass spectrometers using an ion trap. The issues of prosecution history estoppel, collateral estoppel, and judicial estoppel raised by Thermo are questions of law for the Court. *See, e.g., Bayer AG v. Elan Pharm. Research Corp.*, 212 F.3d 1241, 1254 (Fed. Cir. 2000) (“Prosecution history estoppel is a legal matter . . . guided by equitable and public policy principles underlying the doctrines involved and by the facts of the particular case. One of the public policy principles underlying the doctrine is that other players in the marketplace are entitled to rely on the record made in the Patent Office in determining the meaning and scope of the patent.”) (internal citations and quotations omitted); *Lifescan, Inc. v. Home Diagnostics, Inc.*, 103 F.Supp.2d 345, 352 (D. Del. 2000), *aff’d* 13 Fed. Appx. 940 (Fed. Cir. 2001) (unpublished) (“Whether the doctrine of prosecution history estoppel applies in a given case is a question of law.”); *Witkowski v. Welch*, 173 F.3d 192, 198 (3d Cir. 1999) (review of district court’s decision on collateral estoppel involves only question of application of law); *In re Strangie*, 192 F.3d 192, 194 n.1 (1<sup>st</sup> Cir. 1999) (application of collateral estoppel is a question of law); *Knox County Educ. Ass’n v. Knox County Bd. of Educ.*, 158 F.3d 361, 371 (6<sup>th</sup> Cir. 1998) (application of collateral estoppel is a question of law); *Shadis v. Beal*, 520 F.Supp. 858, 860 (D. Pa. 1981) (describing decision to apply collateral estoppel as one for the trial judge); *Beck v. Consol. Rail Corp.*, 128 Fed. Appx. 210, 213 (3d Cir. 2005) (unpublished) (“It is true that the applicability of the defense of judicial estoppel would be a question of law . . . .”)

Various AB/Sciex representations disavowing ion traps are discussed above and in Thermo’s Opening Brief. There are more. For example,

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It is difficult to imagine a clearer disclaimer than this.

AB/Sciex's current arguments amount essentially to an unsupported assertion that it *could have made* narrower disclaimers to the PTO and to Judge McKelvie while avoiding the prior art and Micromass's arguments of inequitable conduct. There is no reason to believe that these assertions are true. But the fact that AB/Sciex *might* have made narrower arguments is legally irrelevant. The controlling arguments are those that AB/Sciex actually did make. *See Norian*, 05-1172, slip op. at 10 (“[T]here is no principle of patent law that the scope of a surrender of subject matter during prosecution is limited to what is absolutely necessary to avoid a prior art reference that was the basis for an examiner’s rejection. To the contrary, it frequently happens that patentees surrender more through amendment than may have been absolutely necessary to avoid particular prior art. In such cases, we have held the patentees to the scope of what they ultimately claim, and we have not allowed them to assert that claims should be interpreted as if they had surrendered only what they had to.”) (TB 113); *North American Container, Inc. v. Plastipak Packaging, Inc.*, 415 F.3d 1335, 1345-46 (Fed. Cir. 2005) (“We are not persuaded by NAC’s argument that the applicant intended only to distinguish his invention from the prior art on the basis that the inner walls in the prior art bottles are entirely concave . . . . [T]hat is not what the applicant argued during prosecution to gain allowance for his claims.”).

AB/Sciex’s broad disclaimers were hardly surprising. Even without express disavowals, the ‘736 patent claims’ requirement of a “mass filter” itself would exclude ion traps. As AB/Sciex told the Court in *Micromass*, a “mass filter essentially does what the name implies: It will *filter* out ions.” (TB 39, *Markman* Hearing Tr.) (emphasis added); (*see also id.* at TB 40.) On the other hand, as AB/Sciex also made clear,

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AB/Sciex, by its own words, thus acknowledged to Judge McKelvie that filters and traps are

two fundamentally different things. This concession is correct, as the difference between a trap and a filter has long been recognized in the art. (*See, e.g.*, TA 339, American Society for Mass Spectrometry, *What Is Mass Spectrometry?*) (stating that an ion trap “does not act as a filter”).)

**K. “Very Low Pressure” and “Substantially Lower Pressure”**

'736 Term	Claims	Thermo Proposal	AB/Sciex Proposal
the pressure in said second chamber being a <u>very low pressure</u> for operation of said second rod set as a mass filter [claim 1]	1, 14	The pressure in the second chamber is at least below $1 \times 10^{-5}$ torr.	1. a pressure at which the second rod set will operate as a mass filter.
a <u>substantially lower pressure</u> than that of said first chamber, for effective mass filter operation of said second rod set [claim 14]			14. a pressure that is sufficiently lower than that of the first chamber such that the second rod set will operate as a mass filter.

AB/Sciex suggests that (1) Thermo's argument regarding the specific meaning of “very low pressure” and “substantially lower pressure” should fail because the *Micromass* Court allegedly rejected a similar argument; and (2) Thermo's proposed constructions allegedly lack a basis in the claim language or a proper understanding of the '736 patent's reexamination history. (AB/Sciex Op. Br. at 50-51.)

Thermo's proposed construction of the “very low pressure” and “substantially lower pressure” limitations is substantially different from any construction proposed by *Micromass*, and has a substantially different basis. Thermo's argument is based on prosecution history disclaimers, an issue never raised by *Micromass*.

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Hence, the

*Micromass* Court did not address the present issue.

The '736 patent's prosecution history shows clearly that AB/Sciex disclaimed all pressures in the second vacuum chamber at or above  $1 \times 10^{-5}$  torr. As AB/Sciex concedes (AB/Sciex Op. Br. at 50-51), during reexamination AB/Sciex identified a prior art reference, the Stafford application, that disclosed use of a chamber at pressures ranging from a low of  $1 \times 10^{-5}$  torr (or 0.01 millitorr) up to a

high of  $1 \times 10^{-1}$  torr (or 100 millitorr).<sup>10</sup> (JA 178-79.) AB/Sciex then distinguished this reference from the claimed invention by saying that Stafford “*does not disclose or suggest* that the second vacuum chamber be operated at *very low pressure*” as the ’736 claims require. (JA 179, Request for Reexamination) (emphasis added.)

Any reasonable person reading these statements would conclude that AB/Sciex told the PTO that the “very low pressure” required by the claims was below the  $1 \times 10^{-5}$  torr low pressure disclosed by Stafford. AB/Sciex again attempts to rewrite history, however, arguing that in its statements to the Patent Office, it “did *not* argue that *no* pressure within Stafford’s range is very low.” (AB/Sciex Op. Br. at 51.) This argument is simply untrue. In unequivocal terms, AB/Sciex told the Patent Office that Stafford discloses and teaches use of “a total pressure of  $1 \times 10^{-1}$  to  $1 \times 10^{-5}$  torr.” (JA 178, Request for Reexamination.) When AB/Sciex then told the Patent Office that Stafford nonetheless “does not disclose or suggest” use of “a very low pressure,” it thereby distinguished “a very low pressure” from every pressure within the range of pressures disclosed and suggested by Stafford — namely, all pressures from “ $1 \times 10^{-1}$  to  $1 \times 10^{-5}$  torr.” (*Id.* at JA 178-79.)

#### L. “The Length of Said First Rod Set”

'736 Term	Claims	Thermo Proposal	AB/Sciex Proposal
the length of said first rod set	1, 14	the length of the rods in the direction of the longitudinal axis.	No construction necessary.

AB/Sciex objects to Thermo’s proposed construction on the grounds that (1) the meaning of “the length of said first rod set” is allegedly “clear on its face,” and (2) that the meaning of the term “longitudinal axis” in Thermo’s proposed construction is unclear. (AB/Sciex Op. Br. at 36.) AB/Sciex’s first assertion is refuted by its second. A three-dimensional object (like a rod) has “lengths” in three different directions (length, height, width). Thermo’s construction confirms which of these three directions is the “length” at issue.

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<sup>10</sup> A millitorr is one-thousandth of a torr, or  $1 \times 10^{-3}$  torr.

AB/Sciex's alleged difficulty in understanding what direction corresponds to the "longitudinal axis" is difficult to believe. Like Thermo, AB/Sciex has already identified the longitudinal direction as the direction "run[ning] lengthwise down the rods" (AB/Sciex Op. Br. at 35). It is also clear that AB/Sciex knows exactly what is meant by "longitudinal axis" because

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Now, however, AB/Sciex claims the term is "nonsensical." (AB/Sciex Opening Br. at 36.)

**M. "Improved Transmission of Ions Through Said Interchamber Orifice"**

'736 Term	Claims	Thermo Proposal	AB/Sciex Proposal
improved transmission of [said] ions through said interchamber orifice	1, 14	Transmission of [said] ions that is better than that which would occur at a pressure-times-length value for the first chamber and first rod set below $2.25 \times 10^{-2}$ torr cm.	increased transmission of ions through the interchamber orifice over that which would occur absent either a product of pressure in the first chamber times length of the first rod set being equal to or greater than $2.25 \times 10^{-2}$ torr cm, or the kinetic energies of ions entering the first rod set being maintained at a relatively low value.

The "improved transmission" limitations of claims 1 and 14 come at the ends of those claims, and it is unclear from the face of the claim language to what the "improved transmission" relates or from what it results. The '736 patent's specification and prosecution history clarify that the '736 patent's alleged invention concerns alleged improvements in transmission that result when the pressure in an ion guide chamber — or, alternatively, the "pressure-times-length" parameter associated with an ion guide — is increased. (Thermo Op. Br. at 61-62.)

AB/Sciex admitted this point at least twice during the *Micromass* case.

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AB/Sciex should be bound by these representations now.

Nonetheless, AB/Sciex asserts that the Federal Circuit “rejected a construction of improved transmission that is virtually identical to Thermo’s proposed construction.” (AB/Sciex Op. Br. at 53-54.) This is untrue. The claim construction that AB/Sciex says was rejected by the Federal Circuit was in fact presented by Micromass for the first time on appeal (it had not been presented to Judge McKelvie), and AB/Sciex argued that the Federal Circuit should therefore “not consider this new construction.” (TB 46, AB/Sciex App. Br.) Hence, even according to AB/Sciex’s own arguments, the Federal Circuit’s decision in *Micromass* should not have substantively addressed the claim construction issue now presented.

AB/Sciex’s current proposed construction is confusing in addition to being incorrect. In its Opening Brief, AB/Sciex acknowledges that, under its proposed construction, *both* increased pressure *and* low kinetic energy must contribute to improved ion transmission for there to be infringement. (*E.g.*, AB/Sciex Opening Br. at 53 (“the improved ion transmission of the invention is due to both increased pressure and low kinetic energy”).) But AB/Sciex’s proposed construction does not clearly convey this proposal. Instead, because it employs the phrase “either . . . or . . .” in combination with the word “absent,” AB/Sciex’s proposed construction confusingly suggests that the patent is infringed even if only one of the two proposed conditions is present.

### III. Disputed Claim Terms for the '784 Patent

#### A. "Mass Analyzer"

'784 Term	Claims	Thermo Proposal	AB/Sciex Proposal
mass analyzer	1, 4	Any device usable either to deliver ions to another structure selectively, or to detect ions selectively, based on ion mass-to-charge ratios.	A device that sorts ions according to their mass to charge ratio and detects them.

AB/Sciex concedes that "mass analyzer" is a "technical term." AB/Sciex also concedes that the technical definition "does not include the detecting function." (AB/Sciex Op. Br. at 59-60, citing "a primer on mass spectrometry published by the American Society of Mass Spectrometry.") Nonetheless, AB/Sciex seeks to engraft onto the '784 patent's claims a requirement that a mass analyzer "detect[]" ions. AB/Sciex's sole asserted basis for this is that Figure 1 of the '784 patent shows an embodiment in which a detector is illustrated as within a dashed box that AB/Sciex understands to mark the boundaries of a "mass analyzer." (AB/Sciex Op. Br. at 59-60; JA 591, 602 '784 patent, fig. 1, 4:32-33.) AB/Sciex neglects to point out that, in Figure 8, there is no such dashed box or even labeling of a "detector" element. (JA 600, '784 patent, fig. 8.) The patent specification thus shows a mass analyzer (an ion trap) that does not contain a detector.

The '784 patent's specification also recites that the "present invention can be used for other types of mass analyzers such as quadrupole mass analyzers of the type described in U.S. Pat. No. 4,540,884 and U.S. Pat. No. RE 34,000," or, more generally, such as a "quadrupole ion trap, ion cyclotron resonance (*i.e.*, magnetic ion trap), time-of-flight, magnetic sector, and double-focusing magnetic/electric sector, monopole, etc." (JA 603, '784 patent, 6:65 to 7:10.) None of these mass analyzers is defined to include a detector. Indeed, the "mass analyzer" in the cited RE 34,000 patent is an ion trap that does not include the separately provided "electron multiplier 24" by which ions are "detected." (TB 51, 58, RE 34,000, 2:17-20, 2:41-46, fig. 1.) The authors of the '784 patent therefore made it clear that the term "mass analyzer" as used in the '784 patent includes all kinds of mass analyzers as generally understood, whether or not the analyzer itself can perform the function

of detecting ions. AB/Sciex's proposed construction is thus contrary both to plain meaning (as AB/Sciex itself concedes (AB/Sciex Op. Br. at 59-60)) and to the '784 patent's specification.

AB/Sciex also errs by seeking to define a "mass analyzer" as "sort[ing] ions." Thermo agrees that there are contexts in which "sorting" might be precise enough to explain what mass analyzers do; however, in this litigation, more precision is needed. To a jury, the verb "sort" may suggest that an analyzer arranges different types of ions for storage in different piles or boxes, just as a person might "sort" clothing. But mass analyzers generally do nothing of the kind. "Mass filters" generally filter out all ions except those of selected mass-to-charge ratios. The rejected ions are discarded ("filtered out"), not "sorted" in the sense that a layperson would use the term. Similarly, "ion traps" store a whole range of "unsorted" ions together, and then eject ions selectively so that they may be detected. Again, this process is not "sorting" as understood by a layperson.

#### B. "Adduct Ions"

'784 Term	Claims	Thermo Proposal	AB/Sciex Proposal
adduct ion(s)	1, 4	An ion formed by combining two or more different kinds of particles, usually an ion and a molecule.	Ions formed by a non-covalent association between sample ions and solvent molecules.

AB/Sciex's contention that the specification "explicitly defined" "adduct ions" is incorrect. The specification only says that "solvent adduction" is "generally considered to be a non-covalent association between sample ions of interest and neutral solvent molecules." (JA 601, '784 patent, 2:39-42.) This is not a definition of "adduct ion"; it is just a description of a type of adduct ions ("solvent adduct ions") that is of concern.

If the broader term "adduct ion" (rather than "solvent adduction" or "solvent adduct ion") were defined in the specification as necessarily involving ions formed between sample ions and solvent molecules, as AB/Sciex suggests, the additional requirement of the claims expressly stating that "sample ions and solvent molecules" combine to form the "adduct ions" (JA 604, '784 patent, 7:15-16, 8:2-4) would be superfluous. Further, the specification and prosecution history's use of the



word “solvent” at least 17 different times in referring to “solvent adduct ion[s],” “solvent adduction,” “solvent adduct species,” “solvent adduct[s],” and “adduct ions which are formed by a combination of sample ions and solvent molecules” (JA 601, 603 ’784 patent, 2:36-39, 2:46-50, 5:10-11, 5:20-27, 5:31-45, 6:19-21, 6:44-45, 6:59-60; JA 930, Amendment dated June 11, 2002) would be similarly superfluous. The claims’ statement that “sample ions and solvent molecules” combine to form the relevant “adduct ions,” and the specification and prosecution history’s repeated references to “solvent adduct ions” and “solvent adduction,” all demonstrate that the unmodified claim term “adduct ion” has a more general meaning.

### C. “Multipole Ion Guide” and “Ion Lens”

'784 Term	Claims	Thermo Proposal	AB/Sciex Proposal
multipole ion guide	1, 4	A device that confines ions radially and guides them along an extended longitudinal path, as determined by multipolar electric and/or magnetic fields.	A rod set to which an AC voltage is applied that confines ions radially along a longitudinal path.
ion lens	4	A device to which one or more voltages are applied so that the device deflects ions and may be used to focus or otherwise to change the shape or direction of an ion beam without continuously confining the ions radially along an extended longitudinal path.	An electrostatic device for changing the path of an ion beam.

AB/Sciex’s proposed constructions of “multipole ion guide” and “ion lens” impermissibly attempt to narrow Thermo’s ’784 patent, while at the same time avoiding constructions that suggest a structural difference between an “ion guide” and an “ion lens,” two different elements of the claim.

#### 1. An “ion guide” does not necessarily have “rods.”

AB/Sciex first attempts to narrow the ’784 patent by suggesting that an ion guide must contain rods. The claims of AB/Sciex’s ’736 patent require that the ion guide contain rods, but that is only one type of ion guide. Thermo’s ’784 patent is not limited to ion guides of that type.

Contrary to its current argument, AB/Sciex correctly admitted in the *Micromass* litigation that a structure need not have rods to be an ion guide. AB/Sciex sought to prove infringement of the ’736 patent by a Micromass device that guided ions using a series of stacked rings. 204 F.Supp.2d at

741, 743-44) (JA 546, 548-49.)

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was right in *Micromass* when it alleged that “ion guides” can use electrodes of many different shapes and forms, and should be bound by that admission. *See, e.g., RF Delaware*, 326 F.3d at 1262; *Boler*, 372 F.Supp.2d at 1020-21.

AB/Sciex also states that a “multipole” must have “rods” because “the specification uses the term ‘rods’ interchangeably with the term “‘poles.’” (AB/Sciex Op. Br. at 64) (“[T]he word ‘multipole’ limits the structure of the device to one that has multiple poles or rods. . . .”). This is not true and just reflects a confusion of word meanings from different contexts. In this context “pole” and “rod” are very different things: a “rod” is a slender bar; a “pole” is a magnetic or electrical polarity (not a flagpole). In scientific and engineering arts, “multipole” is a general term used to describe “distributions of charge or magnetization.” (TB 3, *McGraw-Hill Dictionary of Scientific and Technical Terms* 1241 (4th ed. 1989); *see also* TB 9, *Webster’s Third New International Dictionary* 1486 (1986).) In this context, the term “pole” has nothing to do with the shapes of electrodes, just as the term “bipolar” in the phrase “bipolar disorder” does not indicate that an individual’s brain contains two flagpole-like structures. Here, as in “bipolar,” “pole” is meant to indicate “either of two related opposites” — for example, “either of two” electric charges of equal magnitude but opposite signs. (TB 6, *Merriam-Webster’s Ninth New Collegiate Dictionary* 910 (9th ed. 1988) (definition of “pole”).) Another example from common experience is the North Pole and South Pole. In this context, “pole” is *not* meant to indicate “a long slender usu. cylindrical object.” *Id.* (alternative definition of “pole”).

As AB/Sciex itself recognizes (*see, e.g.,* AB/Sciex Op. Br. at 46-47), there are devices called “three dimensional *quadrupole* ion traps” that have electrodes that bear no resemblance to “poles” in the sense of a flagpole. The ’784 patent itself speaks of “quadrupole ion trap[s]” and provides as an

example an ion trap described in an AB/Sciex patent, U.S. Patent No. 5,179,278. (JA 601, '784 patent, 2:11-13, 2:15-17.) This "quadrupole ion trap" is "a conventional ion trap" consisting of a doughnut-shaped "ring electrode 60 and end electrodes 62, 64." (JA 676, '278 patent, 2:55-56.) It therefore is a "quadrupole," but lacks any structure that has the form of a flagpole.

## **2. An "ion guide" need not have an AC-only voltage.**

AB/Sciex next attempts to narrow the '784 patent by suggesting that an ion guide must have an AC-only voltage. Again, the '736 patent's claims require the ion guide claimed therein to have an AC-only voltage applied, but the same is not true of the '784 patent.

AB/Sciex points to nothing in the '784 patent's claims or the ordinary meaning of the term "ion guide" that suggests an AC-only requirement. (AB/Sciex Op. Br. at 63-65.) The only portion of the specification that AB/Sciex cites to support this supposed requirement is a single sentence describing the "quadrupole ion guides" of one specific embodiment of the invention as being "operated by applying AC voltages 31 and 32 to the poles." (JA 603, '784 patent, 5:3-5, *cited in* AB/Sciex Op. at Br. at 64.) This sentence does not even come close to providing a sufficiently "clear and explicit" definition for purposes of narrowing the ordinary meaning of the claims. *See Unitherm Food Sys., Inc. v. Swift Eckrich, Inc.*, 375 F.3d 1341, 1351 (Fed. Cir. 2004) (to re-define word in specification, patentee must provide a "clear and explicit disclaimer" and "substitute[] a more specific technical construction").

## **3. An "ion lens" need not be an electrostatic device.**

AB/Sciex next tries to narrow the '784 patent by suggesting that an "ion lens" must be an "electrostatic device." As with the term "ion guide," AB/Sciex provides no support for its proposal that an ion lens in the '784 patent is limited to "electrostatic" charge (*i.e.*, static charge, nonoscillating charge, or DC charge), to the exclusion of "electrodynamic" charge (*i.e.*, a dynamic charge, oscillating charge, or AC charge). All of the materials cited by AB/Sciex recognize that one must describe a lens explicitly as an "*electrostatic* lens" if the lens is to have that particular

characteristic. (See AB/Sciex Op. Br. at 74-76, quoting various references describing “electrostatic lenses,” “an electrostatic lens,” “a static voltage lens,” “an electrostatic octopole lens,” and “electrostatic lens 28” (internal quotation marks omitted).) This is because there are other ion lenses such as “Brubaker lenses” that are “RF-only,” *i.e.*, *electrodynamic*, as AB/Sciex has explicitly recognized in at least one of its own patents. (TA 216, U.S. Patent No. 6,504,148, 5:26-30; *see also* Thermo Op. Br. at 68-69.)

#### **4. An “ion guide” has a different structure than an “ion lens.”**

AB/Sciex suggests constructions that eliminate any physical distinctions between an “ion guide” and an “ion lens,” which are two different elements of the claims. The ’784 patent’s claims use both the terms “ion guide” and “ion lens.” Because the claim uses these different terms, it is presumed to refer to different things, as indeed they are so regarded in the art. *CAE Screenplates, Inc. v. Heinrich Fiedler GmbH & Co.*, 224 F.3d 1308, 1317 (Fed. Cir. 2000) (“[W]e must presume that the use of these different terms in the claims connotes different meanings.”). An ion guide must guide ions along an *extended* longitudinal path, rather than merely “confin[e] ions radially along a longitudinal path” as AB/Sciex argues. This aspect of an ion guide is necessary for an ion guide to perform its basic purpose, namely acting as a kind of “ion pipe” that conducts ions from one place to another within a confined space. This structural difference also contrasts a guide from a lens. (Thermo Op. Br. at 66-67.)

At pages 76 and 77 of its brief, AB/Sciex provides two examples in its efforts to show that a “lens” might define an “extended longitudinal path,” and (by contrast) that an ion guide might be “quite short” and therefore not define an “extended longitudinal path.” In other words, AB/Sciex provides examples in an attempt to show that an “ion lens” and a “ion guide” can be structurally equivalent. However, the examples that AB/Sciex cites actually disprove its point.

In the lens example that AB/Sciex proffers (reproduced below), the “electrostatic lens 28” does not confine ions along an extended path. Rather, it is the series of four lenses (27, 28, 31, 34),

stacked side-by-side, that keeps the ions moving along on the extended path. The figure thus confirms that a lens, by itself, does not confine ions. The cited lens reference itself describes the “lens” as doing no more than “shap[ing] the electrostatic field ... to increase ion transmission” (AB/Sciex Op. Br. at 76), an action consistent with Thermo’s description of an “ion lens.”

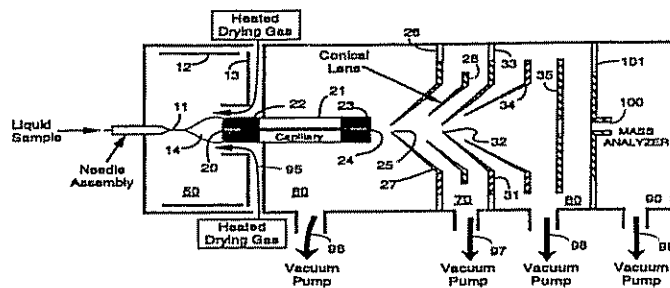


FIG. 1

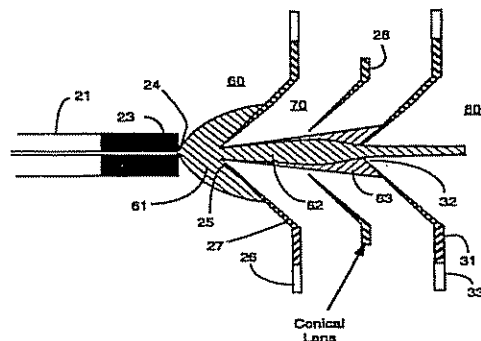
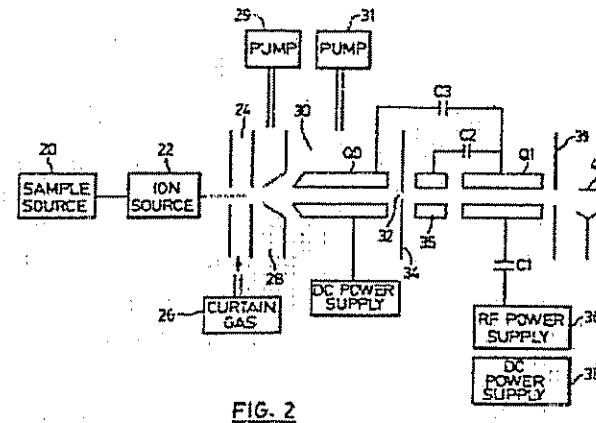


FIG. 2

AB/Sciex’s other example (reproduced below) is meant to show an ion guide having rods that are “quite short” and do not cover an “extended longitudinal path.” (AB/Sciex Op. Br. at 77.) Yet, in the supporting figure the rods (21) are substantially longer than they are wide, and the pathway in which ions are confined is substantially longer than it is tall. (*Id.*) In other words, the rods may be “quite short” on some scale, but they are still long enough to confine ions along an extended longitudinal path.



**5. A lens need not “change the path” of an ion beam.**

Finally, with respect to AB/Sciex’s language defining an “ion lens” as “changing the path of an ion beam,” Thermo believes that the problem is primarily one of imprecision, rather than intentional inaccuracy. AB/Sciex’s choice of language obscures two facts. First, an “ion lens” can act on individual ions that are not part of an “ion beam.” Second, an “ion lens” can simply focus an ion beam about a central axis — *i.e.*, change its width — without changing the beam’s general direction of motion or “path.” This fact is illustrated in Figure 2 on page 76 of AB/Sciex’s Opening Brief (reproduced above). A juror might misunderstand AB/Sciex’s proposed construction to mean that an “ion lens” must change the *direction* in which a beam travels, rather than merely act to alter the beam’s width. Thermo’s proposed construction prevents such a misunderstanding.

**D. “Means ... for Increasing the Translational Kinetic Energy of the Adduct Ions ...”**

'784 Term	Claims	Thermo Proposal	AB/Sciex Proposal
means associated with one or both of said first and second multipole ion guides for increasing the translational kinetic energy of the adduct ions	1	<p>1. The corresponding structures described in the specification include a skimmer 24 that precedes the first ion guide 27, a lens 18 located between the first and second ion guides 27 and 28, and their associated voltage sources.</p> <p>2. “Associated with one or both of said first and second multipole ion guides” means that the “means ... for increasing” has a relation to either or both of the first and second multipole ion guides.</p>	<p>1. The corresponding structure, material, or acts described in the specification is a DC offset voltage between the first multipole ion guide and the immediately preceding lens (ion guide 27 and skimmer 24), or a DC offset voltage between the second ion multipole ion guide and its immediately preceding lens (ion guide 28 and lens 18), or both.</p> <p>2. No construction required separate from that set forth in 1[] above.</p>

AB/Sciex attempts to insert into the claim a requirement that any relevant “DC offset voltage” be between an “ion guide” and its “*immediately preceding* lens.” (AB/Sciex Op. Br. at 65-68.) *See Phillips*, 415 F.3d at 1320 (importing a limitation from the specification into a claim is “one of the cardinal sins of patent law”). The claim language does not say this.

AB/Sciex fails to identify any “definition” or disclosure in the specification that might support importing such a limitation into the claims and ignores explicit language of the specification providing that the voltage need *not* be applied between the ion guide and the “immediately preceding” lens. (JA 602, '784 patent, 3:50-54 (“applying a DC voltage between the ion lens preceding *either* the first *or* the second multipole ion guide . . . .”) (emphasis added).) AB/Sciex’s proposed construction thus imports into the claims the limiting attributes of just one disclosed embodiment, in violation of established law.



**E. “Applying a DC Offset Voltage Between a Selected One or Both Lenses and the Succeeding Multipole Ion Guide”**

'784 Term	Claims	Thermo Proposal	AB/Sciex Proposal
applying a DC offset voltage between a selected one or both lenses and the succeeding multipole ion guide	4	Supplying DC voltage such that there is a voltage difference between at least one of the lenses and the ion guide that comes after them.	Applying a DC offset voltage to at least one of the lenses and the ion guide that comes immediately after it.

AB/Sciex’s effort to import the limitation “immediately after” into claim 4 is no more justified than its effort to import “immediately preceding” into claim 1. AB/Sciex’s efforts to deviate from the claim language’s ordinary meaning are highlighted by the following:

- (1) AB/Sciex’s facially inaccurate statement that the claim language “specifies that the DC offset voltage is applied between a lens and *the* multipole guide that comes after it” (AB/Sciex Op. Br. at 72); and
- (2) AB/Sciex’s ungrammatical statement that “[t]he specification uniformly states that the DC offset voltage is applied between one or both of the *lenses* and the ion guide that comes immediately after *it*” (AB/Sciex Op. Br. at 72 (emphasis added).)

AB/Sciex’s first statement ignores the fact that the claim language actually specifies “a DC offset voltage between a selected one *or both lenses* and the succeeding multipole ion guide.” (JA 604, ’784 patent, 8:10-11) (emphasis added).) AB/Sciex’s second statement provides no proper antecedent for the concluding “it”; is the “it” in question the first lens or the second lens?

In fact, “the succeeding multipole ion guide” is “the ion guide that comes after *them*” — *i.e.*, after both of the lenses. That is what the claim says; “the succeeding” ion guide to “both lenses” is the ion guide that comes after both lenses.

AB/Sciex nonetheless contends that “Thermo’s construction can be read so as *not* to encompass an implementation that the claim and the specification clearly contemplate, specifically, applying a DC offset voltage between the first lens and the first ion guide, because the first ion guide does not come after both lenses.” (AB/Sciex Op. Br. at 73.) AB/Sciex is incorrect. If, for example,

both ion guides and the second lens are all grounded (0 volts) and a 5 volt offset is created between the first lens and the first ion guide, then the same 5 volt offset also exists between the first lens and the second ion guide. This example would constitute applying a DC offset voltage between a “selected one lens” (the first lens) and “the succeeding ion guide” (the second ion guide), and would also involve applying an offset voltage between the first lens and first ion guide. AB/Sciex’s contention that Thermo’s construction would not encompass such an embodiment is thus incorrect.

**F. “A DC Offset Voltage ... Having an Amplitude so as to Provide Translational Kinetic Energy to Said Adduct Ions ...”**

'784 Term	Claims	Thermo Proposal	AB/Sciex Proposal
a DC offset voltage ... having an amplitude so as to provide translational kinetic energy to said adduct ions to dissociate the adduct ions without dissociating the sample ions at the pressure of the second chamber	4	<b>One or more</b> DC offset voltages provides translational kinetic energy such that, at the vacuum pressure of the second chamber, adduct ions that have entered the second chamber are broken up to form additional sample ions without fragmentation of sample ions.	The DC offset voltage provides sufficient translational kinetic energy to the adduct ions entering the second chamber to dissociate them without dissociating sample ions at the pressure of the second chamber.

AB/Sciex’s proposed construction seeks to limit “a DC offset voltage” to one DC voltage. The claim itself contemplates multiple voltages by referring to voltages between one “or both” lenses and an ion guide. (JA 604, ’784 patent, 8:10-11.) So does the specification. For example, lines five through 10 of column 5 (JA 603) discusses the application of multiple voltages, as do lines 27 through 30 of column 3. (JA 602.)

AB/Sciex’s inclusion of the word “sufficient” in its proposed claim construction (AB/Sciex Op. Br. at 77-78) has no basis in the claim language, is not necessary to understand the claim language, and may generate confusion. The notion of having “sufficient” energy *not* to “dissociate[e] sample ions” also does not make sense as a matter of physics.


### CONCLUSION

For the foregoing reasons, as well as the reasons discussed in Thermo's Opening *Markman* Brief, Thermo respectfully requests that the Court construe the disputed claim terms of the '736 and '784 patents in accordance with Thermo's proposed constructions.

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**CERTIFICATE OF SERVICE**

I hereby certify that on December 15, 2005, I electronically filed the foregoing document with the Clerk of Court using CM/ECF which will send notification of such filing, and hand delivered, to the following:

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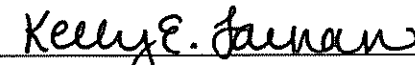
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